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MHT860

EVOLUTION

- E3 -

OPERATOR/SERVICE MANUAL

THIS OPERATOR'S MANUAL MUST BE KEPT IN THE LIFT TRUCK. IT MUST BE READ AND UNDERSTOOD BY THE LIFT TRUCK OPERATOR.

CATALOG 648434AS
R11-10

INTRODUCTION TO SAFETY

MHT 860 L
Evolution
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- INTRODUCTION TO SAFETY -

- ROUGH TERRAIN FORKLIFT TRUCK

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INTRODUCTION TO SAFETY

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS

STUDY THE OPERATOR/SERVICE MANUALS

The information in this manual provides general instructions for the safe operation and maintenance of your forklift truck. This information is vital and must be clearly understood by the operator and serviceman. Study this manual and the Rough Terrain Forklift Safety Manual (part no. 422494) thoroughly and carefully before operating or servicing your forklift. Contact your dealer or Manitou North America, Inc. if you have any questions concerning your forklift, its operation, service or parts. Keep both manuals in the literature box on the forklift available for reference. If either manual becomes illegible or is missing, contact your dealer for replacements immediately. This manual cannot cover every situation that might result in an accident. It is the responsibility of the operator to always remain alert for potential hazards and be prepared to avoid them!

ADDITIONAL RECOMMENDED LITERATURE:

ANSI / ITSDF B56.6 is the national consensus standard for rough terrain forklift trucks. It contains rules about forklift safety, maintenance, safe operation, training, and supervision. Forklift owners should learn this standard and make it available for their operators, service personnel, and supervisors. These standards can be obtained, free of charge, from the Industrial Truck Standards Development Foundation (ITSDF) on their website at www.itsdf.org. The following references are examples from the standard, addressing forklift operators:

A.) OPERATOR TRAINING QUALIFICATIONS

1.) The user shall ensure that operators understand that safe operation is the operator's responsibility. The user shall ensure that operators are knowledgeable of, and observe, all safety rules and practices.
2.) Create an effective operator training program centered around user company's policies, operating conditions, and rough terrain forklift trucks. The program should be presented completely to all new operators and not be condensed for those claiming previous experience.
3.) Information on operator training is available from several sources, including rough terrain forklift truck manufacturers, users, government agencies, etc.
4.) An operator training program should consist of the following:

a.) careful selection of the operator, considering physical qualifications, job attitude, and aptitude;
b.) emphasis on safety of stock, equipment, operator, and other personnel;
c.) citing of rules and why they were formulated;
d.) basic fundamentals of rough terrain forklift truck and component design as related to safety, e.g., in.-lb (N-m) loading, mechanical limitations, center of gravity, stability, etc.;
e.) introduction to equipment, control locations, and functions. Explain how they work when used properly and problems when used improperly.
f.) supervise practice on operating course remote from normal activity and designed to simulate actual operations, e.g., lumber stacking, elevating shingles to the roof, etc.;
g.) oral, written, and operational performance tests and evaluations during and at completion of the course;
h.) refresher courses, which may be condensed versions of the primary course, and periodic "on job" operator evaluation;
i.) understanding of nameplate data and operator instructions and warning information appearing on the rough terrain forklift truck.

B.) GENERAL SAFETY PRACTICES

1.) Rough terrain forklift trucks can cause injury if improperly used or maintained.
2.) Only authorized operators trained to adhere strictly to all operating instructions shall be permitted to operate rough terrain forklift trucks. Unusual operating conditions may require additional safety precautions, training, and special operating instructions.
3.) Modifications and additions which affect capacity or safe operation shall not be preformed without the manufacturer's prior written approval. Where such authorization is granted, capacity, operation, and maintenance instruction plates, tags, or decals shall be changed accordingly.
4.) If the rough terrain forklift truck is equipped with front end attachment(s) or optional forks, the user shall see that the truck is marked to identify the forks or attachment(s), show the approximate weight of the truck and fork or attachment combination, and show the capacity of the truck with forks or attachment(s) at maximum elevation with load laterally centered.
5.) The user shall see that all nameplates and caution and instruction markings are in place and legible.
6.) The user shall consider that changes in load dimension may affect rough terrain forklift truck capacity.

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS (cont.)

B.) GENERAL SAFETY PRACTICES (cont.)

7.) Where steering can be accomplished with either hand and the steering mechanism is of a type that prevents road reactions from causing the handwheel to spin (power steering or equivalent), steering knobs may be used. When used, steering knobs shall be of a type that can be engaged by the operator's hand from the top and shall be within the periphery of the steering handwheel.
8.) Experience has shown that rough terrain forklift trucks which comply with stability requirements are stable when properly operated. However, improper operation, faulty maintenance, or poor housekeeping may contribute to a condition of instability and defeat the purpose of the requirements.
9.) Users shall give consideration to special operating conditions. The amount of forward and rearward tilt to be used is governed by the application. Although the use of maximum rearward tilt is allowable under certain conditions, such as traveling with the load lowered, the stability of a rough terrain forklift truck as determined by standardized tests does not encompass consideration for excessive tilt at high elevations or the operation of trucks with excessive off-center loads.
10.) Some of the conditions which may affect stability are ground and floor conditions, grade, speed, loading (rough terrain forklift trucks equipped with attachments behave as partially loaded trucks even when operated without a load on the attachment), dynamic and static forces, improper tire inflation, and the judgement exercised by the operator.

C.) OPERATING SAFETY RULES AND PRACTICES

1.) Safe operation is the responsibility of the operator.
2.) This equipment can be dangerous if not used properly. The operator shall develop safe working habits and also be aware of hazardous conditions in order to protect himself, other personnel, the rough terrain forklift truck, and other material.
3.) The operator shall be familiar with the operation and function of all controls and instruments before undertaking to operate the rough terrain forklift truck.
4.) Before operating any rough terrain forklift truck, truck operators shall have read and be familiar with the operator's manual for the particular truck being operated.
5.) Before starting to operate the rough terrain forklift truck:
    a.) be in operating position and fasten seat belt;
    b.) place directional controls in neutral;
    c.) apply brakes;
    d.) start engine.
6.) Do not start or operate the rough terrain forklift truck, any of its functions, or attachments from any place other than the designated operator's position.
7.) Keep hands and feet inside the operator's designated area or compartment. Do not put any part of the body outside the operator compartment of the rough terrain forklift truck.
8.) Never put any part of the body into the mast structure or between the mast and the rough terrain forklift truck.
9.) Never put any part of the body within the reach mechanism of the rough terrain forklift truck or other attachments.
10.) Understand rough terrain forklift limitations and operate the truck in a safe manner so as not to cause injury to personnel.
11.) Do not allow anyone to stand or pass under the elevated portion of any rough terrain forklift truck, whether empty or loaded.
12.) Do not permit passengers to ride on rough terrain forklift trucks.
13.) Check clearance carefully before driving under electrical lines, bridges, etc.
14.) A rough terrain forklift truck is attended when the operator is less than 25 ft (7.6m) from the truck, which remains in his view.
15.) A rough terrain forklift truck is unattended when the operator is 25ft (7.6m) or more from the truck, which remains in his view, or whenever the operator leaves the truck and it is not in his view.
16.) Before leaving the operator's position:
    a.) bring rough terrain forklift truck to a complete stop;
    b.) place directional controls in neutral;
    c.) apply the parking brake;
    d.) lower load-engaging means fully, unless supporting an occupied elevated platform;
    e.) stop the engine;
    f.) if the rough terrain forklift truck must be left on an incline, block the wheels;
    g.) fully lower the load-engaging means.
17.) Maintain a safe distance from the edge of ramps, platforms, and other similar working surfaces.
18.) Do no move railroad cars or trailer with a rough terrain forklift truck.

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS (cont.)

C.) OPERATING SAFETY RULES AND PRACTICES (cont.)

19.) Do not use a rough terrain forklift truck for opening or closing railroad car doors.
20.) In areas classified as hazardous, use only rough terrain forklift trucks approved for use in those areas.
21.) Report all accidents involving personnel, building structures, and equipment to the supervisor or as directed.
22.) Do not add to, or modify, the rough terrain forklift truck.
23.) Do not block access to fire aisles, stairways, and fire equipment.
24.) For rough terrain forklift trucks equipped with a differential lock, the lock should not be engaged when driving on the road or at high speeds or when turning. If the lock is engaged when turning, there could be loss of steering control.
25.) Observe all traffic regulations including authorized speed limits. Under normal traffic conditions, keep to the right, maintain a safe distance, based on speed of travel, from the truck ahead; and keep the truck under control at all times.
26.) Yield the right-of-way to pedestrians and emergency vehicles such as ambulances and fire trucks.
27.) Do not pass another truck traveling in the same direction at intersections, blind spots, or at other dangerous locations.
28.) Slow down and sound the audible warning device(s) at cross-aisles and other locations where vision is obstructed.
29.) Cross railroad tracks at an angle wherever possible. Do not park closer than 6 ft (1.8m) to the nearest rail of a railroad track.
30.) Keep a clear view of the path of travel and observe other traffic, personnel, and safe clearances.
31.) If the load being carried obstructs forward view, travel with the load trailing.
32.) Ascend or descend grades slowly and with caution.
    a.) When ascending or descending grades in excess of 5%, loaded rough terrain forklift trucks should be driven with the load upgrade.
    b.) Unloaded rough terrain forklift trucks should be operated on all grades with the load-engaging means downgrade.
    c.) On all grades, the load and load-engaging means shall be tilted back, if applicable, and raised only as far as necessary to clear the road surface.
    d.) Avoid turning, if possible, and use extreme caution on grades, ramps, or inclines; normally travel straight up or down.
33.) Under all travel conditions, operate the rough terrain forklift truck at a speed that will permit it to be brought to a stop in a safe manner.
34.) Travel with load-engaging means or load low and, where possible, tilted back. Do not elevate the load except during stacking.
35.) Make starts, stops, turns, or direction reversals in a smooth manner so as not to shift load and/or overturn the rough terrain forklift truck.
36.) Do not indulge in stunt driving or horseplay.
37.) Slow down for wet and slippery surfaces.
38.) Before driving over a dockboard or bridge plate, be sure that it is properly secured. Drive carefully and slowly across the dockboard or bridge plate, and never exceed its rated capacity.
39.) Do not drive rough terrain forklift trucks onto any elevator unless specifically authorized to do so. Approach elevators slowly, and then enter squarely after the elevator car is properly leveled. Once on the elevator, neutralize the controls, shut off engine, and set brakes. It is advisable that all other personnel leave the elevator before truck is allowed to enter or leave.
40.) Avoid running over loose objects on the roadway surface.
41.) When negotiating turns, reduce speed to a safe level, and turn steering handwheel in a smooth sweeping motion. Except when maneuvering at a very low speed, turn the steering handwheel at a moderate, even rate.
42.) Use special care when traveling without load, as the risk of lateral overturning is greater.
43.) Improper use of stabilizer controls (if so equipped) could cause rough terrain forklift truck upset. Always lower the carriage before operating stabilizer controls.
44.) For rough terrain forklift trucks equipped with lateral leveling:
    a.) Always level the frame before raising the boom or mast, with or without a load.
    b.) Lateral leveling should not be used to position an elevated load; instead, lower the load and reposition the rough terrain forklift truck.
45.) Handle only stable or safely arranged loads.
    a.) When handling off-center loads which cannot be centered, operate with extra caution.
    b.) Handle only loads within the capacity of the rough terrain forklift truck.
    c.) Handle loads exceeding the dimensions used to establish rough terrain forklift truck capacity with extra caution. Stability and maneuverability may be adversely affected.

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS (cont.)

C.) OPERATING SAFETY RULES AND PRACTICES (cont.)

46.) When attachments are used, extra care shall be taken in securing, manipulating, positioning, and transporting the load. Operate rough terrain forklift trucks equipped with attachments as partially loaded trucks when not handling a load.

47.) Completely engage the load with the load-engaging means. Fork length should be at least two-thirds of load length. Where tilt is provided, carefully tilt the load backward to stabilize the load. Caution should be used in tilting backward with high or segmented loads.

48.) Use extreme care when tilting load forward or backward, particularly when high tiering. Do not tilt forward with load-engaging means elevated except to pick up or deposit a load over a rack or stack. When stacking or tiering, use only enough backward tilt to stabilize the load.

49.) The handling of suspended loads by means of a crane arm (boom) or other device can introduce dynamic forces affecting the stability of a rough terrain forklift truck. Grades and sudden starts, stops, and turns can cause the load to swing and create a hazard if not externally stabilized. When handling suspended loads:

a.) do not exceed the truck manufacturer's capacity of the rough terrain forklift truck as equipped for handling suspended loads.

b.) only lift the load vertically and never drag it horizontally;

c.) transport the load with the bottom of the load and the mast as low as possible;

d.) with load elevated, maneuver the rough terrain forklift truck slowly and cautiously, and only to the extent necessary to permit lowering to the transport position;

e.) use tag lines to restrain load swing whenever possible.

50.) At the beginning of each shift and before operating the rough terrain forklift truck, check its condition, giving special attention to:

a.) tires and their inflation pressure

b.) warning devices

c.) lights

d.) lift and tilt systems, load-engaging means, chains, cables, and limit switches

e.) brakes

f.) steering mechanism

g.) fuel system(s)

51.) If the rough terrain forklift truck is found to be in need of repair or in any way unsafe, or if it contributes to an unsafe condition, the matter shall be reported immediately to the user's designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

52.) If during operation the rough terrain forklift truck becomes unsafe in any way, the matter shall be reported immediately to the user's designated authority, and the truck shall not be operated until it has been restored to safe operating condition.

53.) Do not make repairs or adjustments unless specifically authorized to do so.

54.) When refueling, smoking in the area shall not be permitted, the engine shall be stopped, and the operator shall not be on the rough terrain forklift
truck.

55.) Spillage of oil or fuel shall be carefully and completely absorbed or evaporated and fuel tank cap replaced before restarting engine.

56.) Do not use open flames when checking electrolyte level in storage batteries, liquid level in fuel tanks, or the condition of LPG fuel lines and connectors.

57.) Do not lift personnel with the forklift. If the forklift must be used to lift people, precautions for the protection of the personnel must be taken (see ITSDF B56.6, chapter 5.15 Elevating Personnel).

D.) SUSPENDED LOADS

A jib or truss boom should ONLY be used to lift and place loads when the machine is stationary and the frame is level. Transporting suspended loads must ALWAYS be done slowly and cautiously, with the boom and load as low as possible. Use taglines to restrict loads from swinging, to avoid overturn.

The handling of suspended loads by means of a truss boom or other similar device can introduce dynamic forces affecting the stability of the machine that are not considered in the stability criteria of industry test standards. Grades and sudden starts, stops and turns can cause the load to swing and create a hazard.

Guidelines for "Free Rigging / Suspended Loads"

1. DO NOT exceed the rated capacity of the telescopic handler as equipped for handling suspended loads. The weight of the rigging must be included as part of the load.

2. During transport, DO NOT raise the load more than 12 inches (305 mm) above the ground, or raise the boom more than 45 degrees.

3. Only lift the load vertically – NEVER drag it horizontally.

4. Use multiple pickup points on the load when possible. Use taglines to restrain the load from swinging and rotating.

5. Start, travel, turn and stop SLOWLY to prevent the load from swinging. DO NOT exceed walking speed.

6. Inspect rigging before use. Rigging must be in good condition and in the U.S. comply with OSHA regulation §1910.184, "Slings," or §1926.251, "Rigging equipment for material handling."

7. Rigging equipment attached to the forks must be secured such that it cannot move either sideways or fore and aft. The load center must not exceed 24 inches (610 mm).

8. DO NOT lift the load with anyone on the load, rigging or lift equipment, and NEVER lift the load over personnel.

9. Beware of the wind, which can cause suspended loads to swing, even with taglines.

10. DO NOT attempt to use frame-leveling to compensate for load swing.

WARNING

U.S. OSHA regulations effective November 8, 2010 (29 CFR Part 1926, Subpart CC - Cranes and Derricks in Construction) include requirements for employers that use powered industrial trucks ("forklifts") configured to hoist (by means of a winch or hook) and move suspended loads horizontally. In particular, this regulation applies to any rough-terrain forklift (e.g., "telescopic handler") equipped with a jib or truss boom with a hook (with or without a winch), or a hook assembly attached to the forks. [Note: This regulation is in addition to the OSHA regulation that requires specific forklift operator training: §1910.178(l).]

When a forklift / telescopic handler is configured and used for hoisting, the employer must ensure that:

1. **Forklift, lift equipment and rigging have been inspected (each shift, month and year) and are in good, safe condition and properly installed.**

2. **An operator's manual and applicable load charts are on the forklift.**

3. **Work zone ground conditions can support the equipment and load. Any hazardous conditions in the work area have been identified, and the operator notified.**

4. **Equipment is being used within its rated capacity and in accordance with the manufacturer's instructions.**

5. **Operator and crew members have been trained in the safe use and operation of the equipment, including how to avoid electrocution.**

6. **During use, no part of the equipment, load line or load will be within the minimum clearance distance specified by OSHA [10 feet (3.0 m), and more for lines rated over 50 kV] of any energized power line, and any taglines used are non-conductive.**

7. **In addition, for lift equipment with a rated capacity greater than 2000 lbs. (907 kg), the employer must ensure that:**

a.) An accessible fire extinguisher is on the forklift;

b.) Monthly and annual inspections are performed and documented, and records retained (three months for monthly, one year for annual);

c.) Before November 10, 2014, operators must have had the additional training and qualification / certification required by OSHA regulations §1926.1427 and §1926.1430.

Note: Refer to the full text of the OSHA crane regulation (29 CFR Part 1926, Subpart CC) for a detailed description

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CONCLUSION:

1.) ATTEND OPERATOR TRAINING CLASSES

The forklift operator must clearly understand all instructions concerning the safe operation of the forklift and all safety rules and regulations of the work site. They must have successfully completed a training coarse in accordance with the Powered Industrial Truck Standard (29 CFR 1910.178) as described by the Occupational Safety and Health Administration (OSHA). They must be qualified as to their visual, hearing, physical, and mental ability to operate the equipment safely. NEVER use drugs or alcohol while operating a forklift! NEVER operate or allow anyone to operate a forklift when mental alertness or coordination is impaired! An operator on prescription or over-the-counter drugs must consult a medical professional regarding any side effects of the medication that may impair their ability to safely operate the forklift.

2.) CREATE A MAINTENANCE PROGRAM

OSHA recommends a maintenance log, listing repairs requested and completed, for each forklift. Also, “lock out tag procedures” should be utilized. If the forklift malfunctions; park it safely, remove the key, tag “Do Not Use”, and report the problem to the proper authority or authorized service personnel immediately.

ROUGH TERRAIN FORKLIFT TRUCK GENERAL SAFETY STANDARDS (cont.)

2.) CREATE A MAINTENANCE PROGRAM (cont.)

For the best forklift performance and operation, a maintenance program is required. Use the hour meter on the instrument panel to keep maintenance properly scheduled (see SECTION TWO - “Servicing Schedule”). For repairs on major components (engine, transmission, etc.), contact your nearest dealer for a Repair Manual. Do not operate a forklift that is damaged or does not function properly. Only authorized personnel may make repairs or adjustments to the lift truck. After repairs, the lift truck must be tested for safe operation before returning to service.

3.) FORKLIFT KNOWLEDGE

Forklift trucks can cause serious injury if improperly used or maintained. Study all of the manuals provided for your forklift model. Learn the locations and meanings of all safety decals. If any decals are illegible or missing, have them replaced immediately. Make sure all safety features provided by the original manufacturer are in place and function properly. Do not operate a forklift with damaged, missing or unsafe components. Have it repaired by authorized service personnel. Learn the functions of all controls, gauges, indicator lights, etc. on the forklift. Know the speed/gear ranges, braking and steering capabilities, load ratings and clearances. When referring to the location of forklift components, the terms “left”, “right”, “front”, and “rear” are related to the operator seated normally, facing forward in the operator’s seat. If you have any questions about the forklift, consult your supervisor. Failure to fully understand or obey safety warnings can result in serious injury or death!

4.) WORK SITE KNOWLEDGE

Before operating on a work site, learn the rules for movement of people, forklifts and all other traffic. Check the size, weight, and condition of the loads you will be expected to handle. Verify that they are properly secured and safe to transport. Learn where the loads are to be placed, planning your route for a safe approach, watching for hazardous conditions. Will a signal man be required to help place the load? Remove any debris which may cause tire damage or rupture. Plan your route around problem areas or have them corrected. Inform the supervisor of any unsafe conditions observed at the site. Examples of hazards: power lines, cables, low clearance structures, garage doors, telephone pole guide lines, fencing, loose lumber, building materials, drop-offs, trenches, rough/soft spots, oil spills, deep mud, steep inclines, railroad tracks, curbs, etc.. NEVER approach power lines, gas lines or other utilities with the forklift! Always verify that local, state/provincial and federal regulations have been met. Report any accidents involving personnel, building structures, and equipment to the supervisor immediately. Always remain alert - conditions are constantly changing at the work site!

TECHNICAL SUPPORT

All data provided in this manual is subject to production changes, addition of new models, and improved product designs. If a question arises regarding your forklift, please consult your dealer or K-D Manitou, Inc. for the latest information. When ordering service parts or requesting technical information, be prepared to quote the applicable Model/Serial Numbers.

SAFETY MESSAGES

NOTE THE SAFETY ALERT SYMBOL (SHOWN BELOW). IT IDENTIFIES POTENTIAL HAZARDS WHICH, IF NOT AVOIDED MAY RESULT IN INJURY OR DEATH! Also, observe the safety messages places throughout this manual; providing special instructions, telling you when to take precautions and to identify potential hazards. The safety messages are highlighted and outlined in a box similar to those shown in the examples below.

SAFETY ALERT SYMBOL

NOTE or NOTICE
Provides information, special instructions or references about the lift truck.

IMPORTANT
Precautions which must be taken to avoid damage to the lift truck.

CAUTION
Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. May also alert unsafe practices.

WARNING
Indicates a potentially hazardous situation which, if not avoided, *may result in death or serious injury!*

DANGER
Indicates an imminently hazardous situation which, if not avoided, *will result in death or serious injury.*

CALIFORNIA PROPOSITION 65 WARNING

Diesel Engine Exhaust and some of its constituents are known to the State of California to cause cancer, birth defects or other reproductive harm.

WARNING: Battery posts, terminals and related accesories and related accessories contain lead and lead compounds. **Wash hands after handling.**

SAFETY DECALS

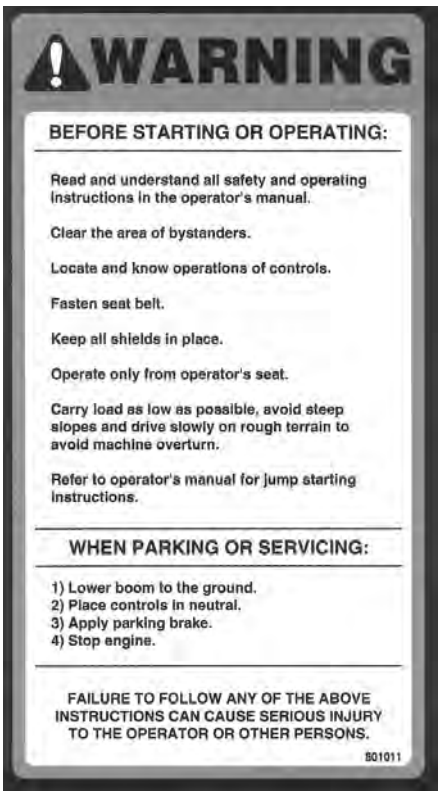
The purpose of this chapter is to introduce you to the safety messages, decals, and nameplates found on your forklift truck. The decals are identified by name, part number, location, and a brief description. (The forklift model logos, and other misc. decals not shown, can be found in your forklift parts manual.) The decals illustrated may not be exactly the same as those installed on your forklift; installation of the decals varies depending on the forklift model, series, decal updates, etc.. The size and location of some decals limit the amount of information that can be placed upon it. For this reason, additional detailed information not found on the decals is provided through-out this manual.

Every decal placed on the lift truck is important; they are constant reminders of safety and instructions that should never be taken for granted. Even experienced operators can be seriously injured or killed by ignoring, refusing to enforce, or forgetting to follow safe operating procedures! Do not assume you know all safety issues concerning the decals. Before operating the lift truck; learn the meaning(s) of the decals as described in this manual. If any decal becomes illegible or missing, have it replaced immediately! Always replace decals using the same decal part no., unless otherwise specified by the manufacturer. For replacement decals not found in your parts manual, contact your nearest dealer. If you have any questions, contact your supervisor or nearest dealer for advice before operating your forklift!

801011

Before Starting - 801011

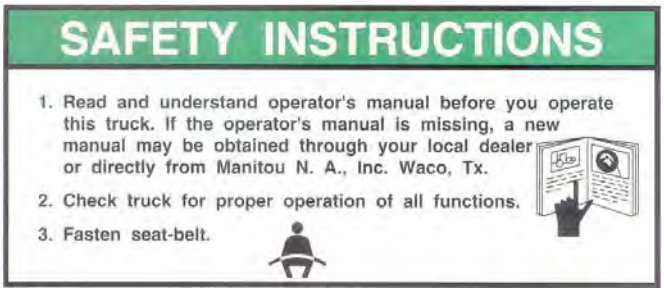
(Boom equipped models). Location: on the brake fluid cover panel (to the left and below the dash panel).


WARNING
BEFORE STARTING OR OPERATING:
Read and understand all safety and operating instructions in the operator's manual.
Clear the area of bystanders.
Locate and know operations of controls.
Fasten seat belt.
Keep all shields in place.
Operate only from operator's seat.
Carry load as low as possible, avoid steep slopes and drive slowly on rough terrain to avoid machine overturn.
Refer to operator's manual for jump starting instructions.
WHEN PARKING OR SERVICING:
1) Lower boom to the ground.
2) Place controls in neutral.
3) Apply parking brake.
4) Stop engine.
FAILURE TO FOLLOW ANY OF THE ABOVE INSTRUCTIONS CAN CAUSE SERIOUS INJURY TO THE OPERATOR OR OTHER PERSONS.
801011

Safety Instructions - 420792

(Mast equipped models). Location: on or near the operator manual storage case, and/or on the dash panel.

Instructions for the forklift operator; before operating the forklift.


SAFETY INSTRUCTIONS
1. Read and understand operator's manual before you operate this truck. If the operator's manual is missing, a new manual may be obtained through your local dealer or directly from Manitou N. A., Inc. Waco, Tx.
2. Check truck for proper operation of all functions.
3. Fasten seat-belt.

Use of Seat Belt - 801012

(Boom equipped models). Location: to the right of the operator, near the hydraulic control lever.

Instructs the operator to always wear the seat belt during operations, and never jump from an over-turning forklift.

DANGER
Always wear seat belt when operating machine.
Never jump from a tipping machine.
Failure to comply may result in serious injury or death.
801012

SAFETY DECALS

Emergency and Parking Brake - 801010

Location: near the park brake lever.

Identifies the Emergency/Parking Brake Lever.

Alarm Must Sound - 496162

Location: on the dash, in direct view of the operator.

The backup alarm must sound when the forklift is placed in reverse gear.

No Riders - 420732

Location: on the cab entrance(s), and on or near wheel fenders and engine cover.

Informs: riders are not allowed on the forklift.

Clear of Raised Boom - 801006

(Boom equipped models). Location: on both sides of the boom nose.

Keep away from unsupported boom.

DANGER
Stay clear of raised boom unless properly supported. Operator may be crushed between falling boom and main frame.
Failure to comply may result in serious injury or death.
801006

Clear of Power Lines - 801007

(Boom equipped models). Location: on both sides of the boom nose.

Keep away from power lines.

DANGER
Keep machine at least 25 feet from overhead power lines.
Failure to comply may result in serious injury or death by electrocution.
801007

SAFETY DECALS

Use of Frame Leveling - 801013

(Boom equipped models). Location: to the right of the operator near the hydraulic control lever.

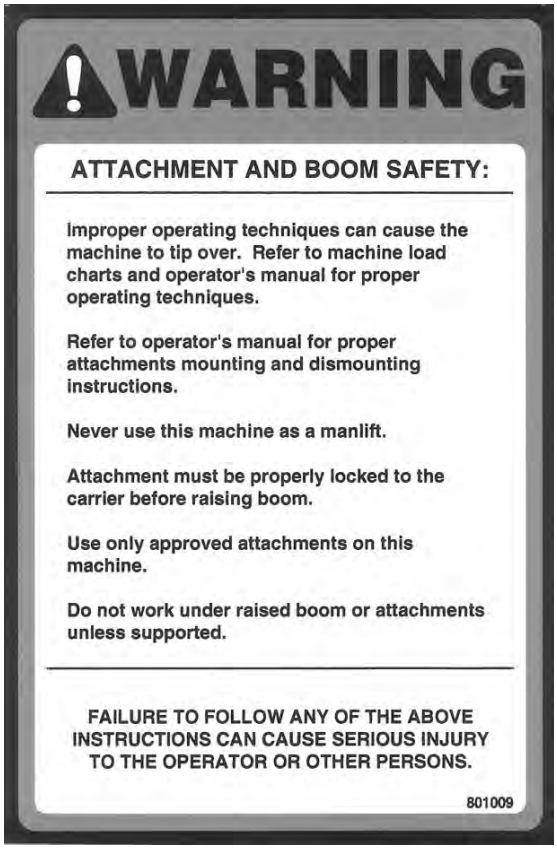
Frame leveling notice; load must be lowered.

DANGER
READ OPERATOR'S MANUAL
Level machine at ground level before raising boom. Do not adjust frame level control when boom is raised above ground level. If frame position is changed with a raised boom, machine may become unstable and turn over.
Failure to follow instructions may result in serious injury or death.

Attachment and Boom Safety - 801009

(Boom equipped models). Location: on both sides of the boom nose.

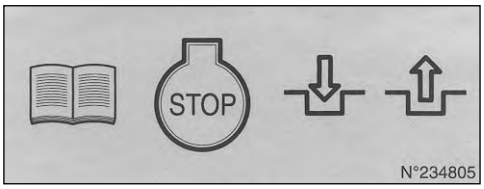
Important reminders of attachment and boom safety.


WARNING
ATTACHMENT AND BOOM SAFETY:
Improper operating techniques can cause the machine to tip over. Refer to machine load charts and operator's manual for proper operating techniques.
Refer to operator's manual for proper attachments mounting and dismounting instructions.
Never use this machine as a manlift.
Attachment must be properly locked to the carrier before raising boom.
Use only approved attachments on this machine.
Do not work under raised boom or attachments unless supported.
FAILURE TO FOLLOW ANY OF THE ABOVE INSTRUCTIONS CAN CAUSE SERIOUS INJURY TO THE OPERATOR OR OTHER PERSONS.
801009

Hydraulic Coupling - 234805

Location: near the quick-disconnect adapters.

Stop the engine and release hydraulic pressure before changing attachments.



Rotating Fan and Belt(s) - 801008

Location: on the radiator near the fan, and on any fan belt/pulley cover(s).

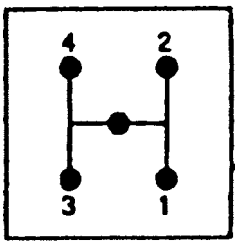
Keep hands and clothing away from rotating fan and belts.

SAFETY DECALS

Gear Shift Pattern - 33460

(4-speed transmission models). Location: near the gear shift lever.

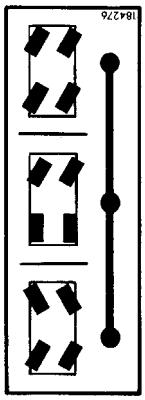
Identifies the gear shift pattern of the forklift transmission.



Steering Mode - 184276

(4 wheel steer equipped models). Location: near the steering mode selection lever.

Identifies the steering mode selection.



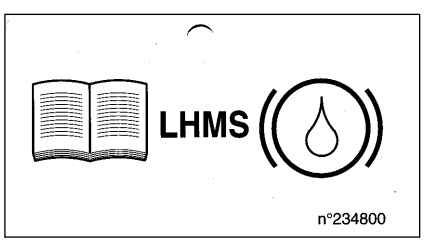
Mineral Oil (Brake Reservoir) - 221322 or 234800 has been replaced by 164091.

Location: near the brake fluid reservoir where applicable.

Refer to the Operator/Service Manual for the correct brake fluid (mineral oil) to be used in the brake system.

221322

234800

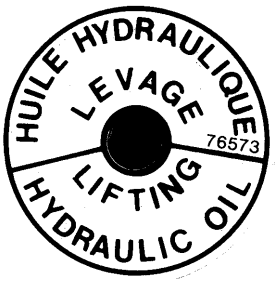


SAFETY DECALS

Hydraulic Oil - 234798 or 76573

Location: on the hydraulic tank or filler cap.

Identifies the hydraulic reservoir (tank) or filler cap.



Hydraulic Oil - 61024

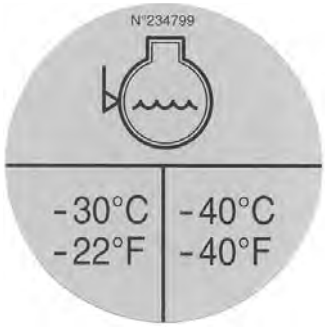
Location: on the hydraulic tank.

Identifies the hydraulic reservoir (tank).

Anti-Freeze - 234799

Location: on the radiator, near the radiator filler cap.

Indicates required minimum to maximum anti-freeze protection (-22^{0}F to -40^{0}F).



Diesel Fuel - 161101

Location: on the fuel tank, near the filler cap.

Identifies the fuel tank, and use of diesel fuel.

No Step - 496735

Location: varies, depending on the forklift model.

Instructs personnel not to use the designated area as a step.

Do Not Tow - 494918

(Hydrostatic equipped models). Location: on the dash, in view of the operator.

Towing the forklift will damage the transmission; refer to the operator's manual.

WARNING
THIS VEHICLE IS EQUIPPED WITH A HYDROSTATIC TRANSMISSION. DO NOT ATTEMPT TO PUSH OR TOW, TRANSMISSION DAMAGE WILL OCCUR. SEE OPERATOR'S MANUAL.
494918

SAFETY DECALS

Attachment Warning - 421016

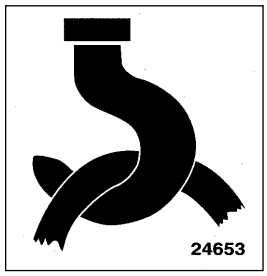
(Boom equipped models). Location: on the boom coupler, near where the retaining shaft is installed.

Reminder to operator; install attachment retaining shaft and safety pin before operations.

WARNING
THE ATTACHMENT RETAINING SHAFT MUST BE IN PLACE AND SECURED WITH THE SAFETY SNAP PIN BEFORE TRUCK OPERATION.
421016

Hook Here - 24653

Location: at points provided on the forklift, where straps or chains may be attached to secure the forklift to a trailer during transport.



Fork Safety - 426641

(Mast equipped models). Location: on the front and back side of the mast's outer rails, at eye level (4 required).

Instructs personnel not to travel beneath or upon the lift truck forks.

Pinch Point, Large, 2.5 x 4.5 in. - 426643
Pinch Point, Small, 1.5 x 2.75 in. - 426642

(Mast equipped models). Location: on the front and rear sides of the mast cross bracing.

Keep fingers away from the mast crossbracing.

HAND THROTTLE DANGER - 804784

(Boom equipped models, option). Location: Near the hand throttle mechanism.

Reminder to operator; set parking brake before operating hand throttle. Disengage hand throttle before leaving the forklift.

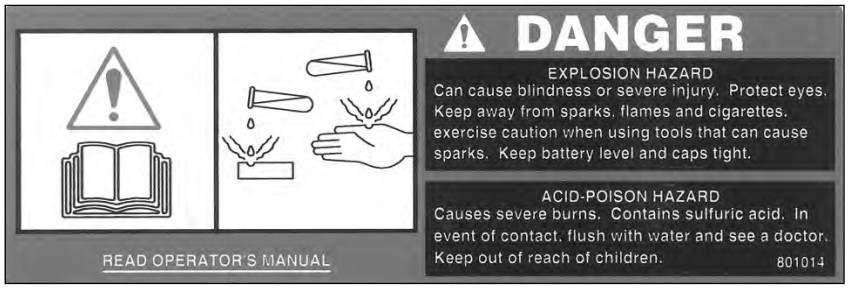
DANGER
DISENGAGE HAND THROTTLE BEFORE LEAVING TRUCK.
OPERATE HAND THROTTLE ONLY WITH PARKING BRAKE SET.
FAILURE TO COMPLY MAY RESULT IN SERIOUS INJURY OR DEATH.

SAFETY DECALS

Acid in Battery - 801014

Location: in or near the battery storage compartment.

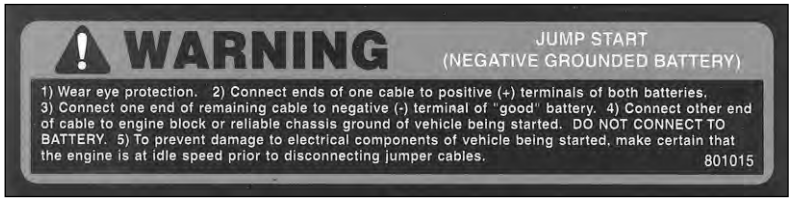
Addresses battery hazards.


DANGER
EXPLOSION HAZARD
Can cause blindness or severe injury. Protect eyes. Keep away from sparks, flames and cigarettes. exercise caution when using tools that can cause sparks. Keep battery level and caps tight.
ACID-POISON HAZARD
Causes severe burns. Contains sulfuric acid. In event of contact, flush with water and see a doctor. Keep out of reach of children.
801014
READ OPERATOR'S MANUAL

Jump Start Battery - 801015

Location: in or near the battery storage compartment.

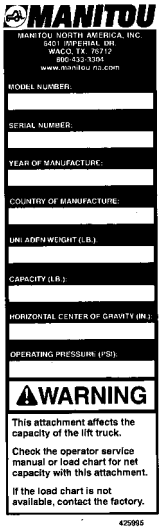
Jump start instructions.


WARNING
JUMP START
(NEGATIVE GROUNDED BATTERY)
1) Wear eye protection. 2) Connect ends of one cable to positive (+) terminals of both batteries. 3) Connect one end of remaining cable to negative (-) terminal of "good" battery. 4) Connect other end of cable to engine block or reliable chassis ground of vehicle being started. DO NOT CONNECT TO BATTERY. 5) To prevent damage to electrical components of vehicle being started, make certain that the engine is at idle speed prior to disconnecting jumper cables.
801015

Attachment Plate - 425995

Location: on the optional removeable forklift attachment.

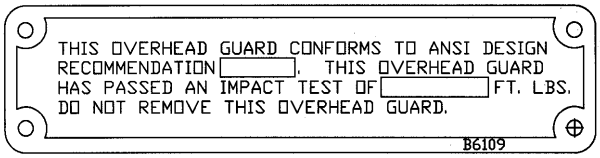
Important manufacturer information about the attachment. Record this information for use when contacting the maufacturer for parts and service.



Overhead Guard Data Plate - B6109

Location: attached to the overhead guard.

Overhead guard conformity.


THIS OVERHEAD GUARD CONFORMS TO ANSI DESIGN RECOMMENDATION [ ]. THIS OVERHEAD GUARD HAS PASSED AN IMPACT TEST OF [ ] FT. LBS.
DO NOT REMOVE THIS OVERHEAD GUARD.
B6109

Forklift Data Plate - 496550

(Boom equipped models)

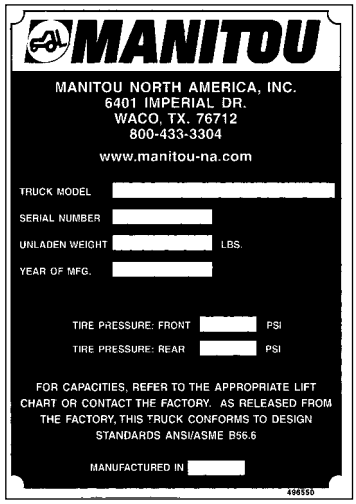
Forklift Data Plate - 496538

(Mast equipped models)

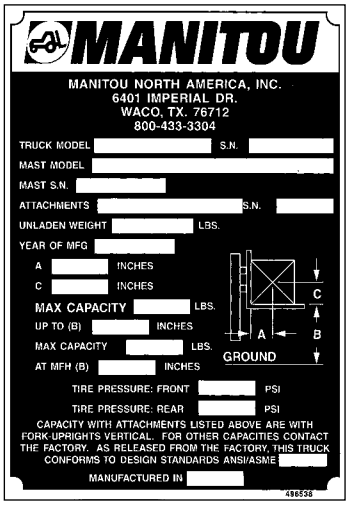
Location: within the operator's compartment.

Important forklift truck identification. Record this information for use when contacting the manufacturer for parts and service.

496550



496538



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INTRODUCTION

Our telescopic lift trucks have been designed to ensure simple manoeuvres and easy maintenance.
Before starting up the lift truck for the first time, the operator must read and understand the various topics discussed in this Manual: these instructions are meant to provide all the information required for plant conduction and maintenance. The operator must follow these instructions to get the best out of his telescopic lift truck.
The terms “right” and “left”, “front” and “rear” used in this Manual refer to positions as seen by the operator normally in the driver’s seat.
Always state the following information when ordering spare parts or requesting technical information:

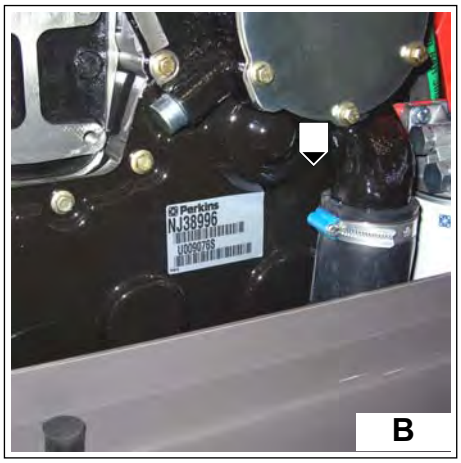
MANITOU
MANITOU NORTH AMERICA, INC.
6401 IMPERIAL DR.
WACO, TX. 76712
800-433-3304
www.manitou-na.com
FOR CAPACITIES, REFER TO THE APPROPRIATE LIFT CHART OR CONTACT THE FACTORY. AS RELEASED FROM THE FACTORY, THIS TRUCK CONFORMS TO DESIGN STANDARDS ANSI/ASME B56.6
A

Manufacturer’s data plate (FIG.A)

- Model _____
- Series _____
- Serial No. _____
- Chassis No. _____
- Year of manufacture _____

On internal combustion engine (FIG.B)

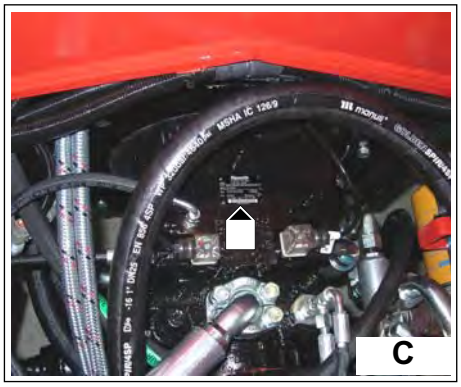
- Engine No. _____



B

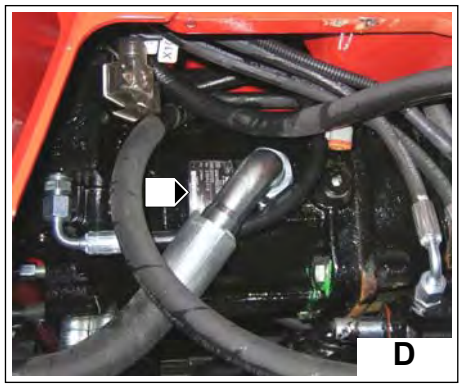
On hydrostatic pump (FIG.C)

- MANITOU reference No. _____
- Serial No. _____


C

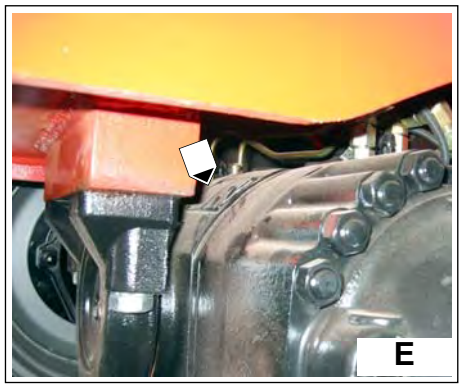
On hydrostatic engine (FIG.D)

- MANITOU reference No. _____
- Serial No. _____


D

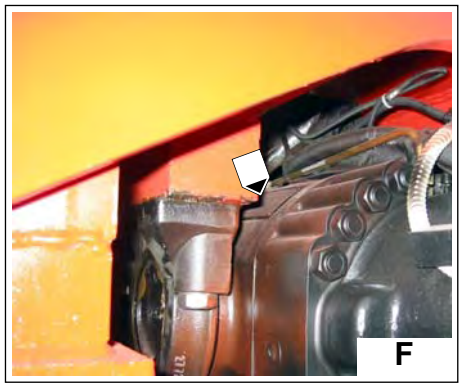
On front axle (FIG.E)

- Axle type and model _____
- Serial No.of front axle _____


E

On rear axle (FIG.F)

- Axle type and model _____
- Serial No.of rear axle _____


F

On cab (FIG.G)

Cab No. _____

Write all these numbers immediately in the empty spaces provided. Since the MANITOU policy is ongoing improvement of our products, our range of telescopic lift trucks may be subject to modifications without any obligation for us to give advance warning to our customers.

G

INTRODUCTION TO SAFETY

1 - INSTRUCTIONS

INTRODUCTION TO SAFETY

ORIGINAL SPARE PARTS AND TOOLING

ALWAYS USE ORIGINAL PARTS FOR MAINTENANCE OF YOUR LIFT TRUCK.

BY AUTHORIZING THE USE OF NON-ORIGINAL PARTS, *YOU RUN THE RISK*

- of becoming legally involved in case of an accident.

- of becoming technically involved for causing operating problems to the life of the truck.

If the manufacturer uses counterfeit parts or components that are not homologated, this can put an end to the warrantee according to the terms of the contract and induce the manufacturer to withdraw the Certificate of Conformity.

USING ORIGINAL PARTS DURING MAINTENANCE OPERATIONS *WILL PROTECT YOU LEGALLY*

- The user who looks for alternate suppliers does so at his own risk.

- The user who modifies or gets third parties to modify the lift truck must be aware of the fact that a new item is issued on the market and this also involves his responsibility.

- The user who copies or has copies made of original parts exposes himself to legal risk.

- The Certificate of Conformity implies the manufacturer's responsibility only for the parts selected or processed under his control.

- The practical maintenance conditions are fixed by the manufacturer. Failure by the user to respect these conditions, will free the the manufacturer of all responsibility.

THE MANUFACTURER MUST PROVIDE THE USER WITH

- His know-how and skill.
- Guarantee of the quality of all the jobs done.
- Original spare parts.
- Preventive maintenance service.
- Effective diagnostics service.
- Improvements due to exchange of experiences.
- Training of personnel concerned.
- Only the manufacturer understands the truck design in detail and therefore the best technological capacity to ensure maintenance.

INSTRUCTIONS FOR THE LIFT TRUCK DRIVER

WARNINGS

REMEMBER THAT THIS SYMBOL MEANS:

ATTENTION! BE CAREFUL! YOUR SAFETY AND THAT OF YOUR TRUCK IS AT STAKE.

- Most accidents linked to the use, maintenance and repair of the lift truck are due to failure to apply and observe the elementary safety regulations. Identifying all the risks you are exposed to and taking all the necessary precautions will help avoid these accidents.
- All the operations or movements not described in the instruction Manual must be avoided; anyone using another method must first of all ensure his own safety and that of others and the good working order of the lift truck.
- Since it is impossible to foresee all hazard situations, the manufacturer's instructions and safety regulations regarding the lift truck included in this Manual cannot be considered as complete.

Failure to observe the safety regulations and use, maintenance and repair instructions can result in serious accidents, sometimes even death.

Draws the user's attention to the possible risks of driving at speeds exceeding those imposed by road travel restrictions, especially:
- Risk of losing control on bad roads.
- Increased braking space.

The user must always be in a position to control the lift truck and therefore:
- Adapt the speed to every situation to ensure his own safety, that of others and his materials.
- Judge the braking space constantly.

Experience shows that there may be certain contraindications for the use of the lift truck. These abnormal uses (the main ones are indicated subsequently) are strictly forbidden.

- Expected abnormal working resulting from routine negligence but not due to intentional incorrect use of material.
- Reflected behavior of a person in case of defective functioning, accident, breakdown, etc. while using the lift truck.
- Behaviour resulting from application of "law of minimum stress" while carrying out a function.
- For certain machines, the expected behaviour of certain persons such as apprentists, adolescents, disabled persons, beginners tempted to drive a lift truck, operators tempted to place bets regarding the use, competition, or personal experience.

The person responsible for the material must take these criteria into account while evaluating a person's driving attitude.

- Become familiar with the telescopic lift truck on the terrain where it will be used.
- Carry the load in a low position with the telescopic arms fully retracted.
- Set the fork arms perpendicular to the load to be lifted.
- Drive the truck at a speed suited to the ground conditions in question.
- Never drive too fast or brake sharply with a load.
- When picking up a load, check that the ground is as even as possible.
- Never attempt operations that are beyond the capacity of the lift truck.
- Never lift a load that is heavier than the truck capacity and never increase the size of the counterweight.
- Drive around obstructions.
- Be careful when there are electric cables, ditches, freshly dug soil or recently filled excavations.
- Never leave the engine running when the truck is unattended.
- Use the parking brake to deposit a difficult load or on sloping ground.
- Never ever leave the truck parked with a raised load.
- Never authorize anyone to come near or walk under a load.
- Always bear safety in mind and only carry well balanced loads.
- Never lift a load by a single fork arm.
- Drive carefully and with prompt reflexes.
- When the lift truck is not being used, lower the fork arms to the ground and engage the hand brake.
- Never leave the ignition keys in the truck whilst the driver is absent.

- Never leave the truck loaded with the hand brake engaged on slopes exceeding a 15% gradient.
- When lifting a load, take care to make sure there is no obstacle to the movements and avoid making false movements.
- Comply with the values given in the load curves.
- Never transport passengers on the lift truck.

At every tool change,
to avoid damaging the hydraulic connections:

- stop the combustion engine
- turn the key contact to position I
- discharge pressure from the circuit by means of the knob.

- Check to make sure these connections are always clean.

GENERAL INSTRUCTIONS

A - INSTRUCTION MANUAL

- Read the Instruction Manual carefully and understand it.
- The Instruction Manual must always be kept in its place in the lift truck, and it must be in the driver's language.
- Observe the safety regulations and the instructions described for the lift truck.
- Replace all rating plates and stickers that become illegible or damaged.

B - DRIVING PERMIT
(Comply with the legislation applicable in the country of use)

- Only specially trained qualified personnel can use the lift truck. The lift truck can only be used with a driver's permit issued by the Manger of the factory where the vehicle is used.
- The driver must always carry the driving permit while on duty.
- The driver must not entrust another person to drive the lift truck.
- The use of the lift truck must conform to the rules of professional skills.

C - ROUTINE MAINTENANCE

- If the user finds that his lift truck does not work correctly or does not comply with the safety regulations, he must inform the person in charge immediately.
- The driver must not carry out repairs or make adjustments himself, unless he has been trained for the tasks. He must keep the lift truck for which he is responsible in perfect condition.
- Daily maintenance must be carried out (see Chapter: A - DAILY OR EVERY 10 HOURS OF SERVICE in part : 3 - MAINTENANCE).
- The tyres must be checked to make sure they are suitable for the type of terrain (See surface of tyres in contact with the ground, Chapter: SPECIFICATIONS in part : 2 - DESCRIPTION).

  Tyres may be of different types:
  - . Tyres for SAND.
  - . Tyres for AGRICULTURAL TERRAIN.
  - . Snow chains.

  Other options are available; for more information, contact your agent or dealer.

Do not use worn or damaged tyres.

Do not use tyres inflated with polyurethane foam: it is not guaranteed by the manufacturer except without authorization.

- For your safety and that of others, avoid modifying the structure or making adjustments to the various lift truck components, (hydraulic pressure, calibration of the limiters, engine speed, supplementary tooling assembly, etc.). The same applies to deactivation or modification of safety systems. In such cases the manufacturer shall be freed of all responsibility.

Periodic checks are compulsory to keep the lift truck in "state of conformity". The checking frequency is defined by the regulations applicable in the country of use.
Maintenance or repairs not included in part: 3 - (MAINTENANCE) must be carried out by qualified personnel (Contact your agent or dealer for more information) in compliance with the safety conditions to guarantee your own safety and that of others.

D - ENVIRONMENTAL OPERATING CONDITIONS

- Equip the lift truck with an extinguisher if it is used in a place devoid of extinguishing means. For information regarding the optional solutions available, please contact your agent or dealer.
- Always take into account the climatic and atmospheric conditions of the place in which the machine is used.

Lubricant is filled at the factory using lubricants suitable for average climatic conditions, i.e.: - 15° C to + 35° C. For use in more severe conditions, before starting up the truck, drain out the lubricant and fill with lubricants suitable for operation at these temperatures. The same applies to the cooling liquid. (Please contact your agent or Dealer for more information).

. Protection from frost (See Chapter: LUBRICANTS AND FUELS in part : 3 - MAINTENANCE).
. Use of suitable lubricants (Please contact your agent or Dealer for more information).
. Engine filters.
. Lights (Work light).

For more information regarding the options available, please contact your agent or dealer.

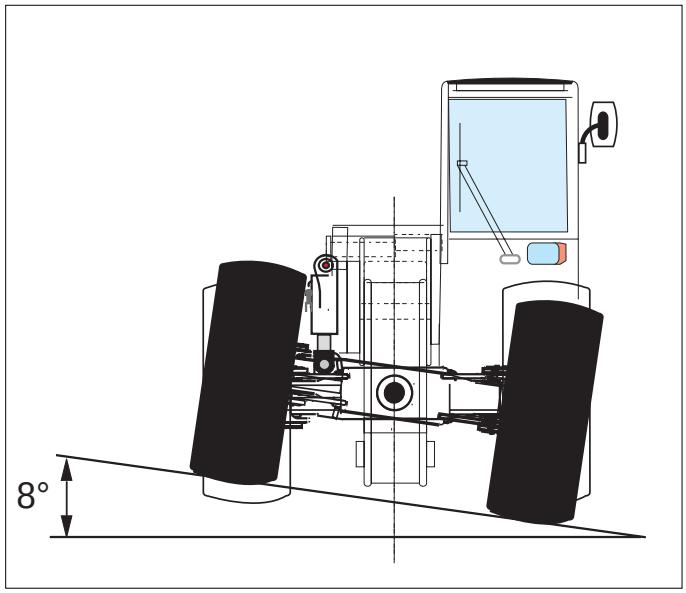
Do not use the lift truck in protected areas
(Such as: Refineries, explosive atmosphere). Special optional equipmen is available for use in such spaces. Please contact your agent or dealer.

PLEASE CONTACT YOUR AGENT OR DEALER IF NECESSARY.

RECOMMENDATIONS FOR USING THE TRUCK

LEVELLING DEVICE

The MHT 860 LT - MHT 950 LT *Evolution* machines are provided with a device for levelling the chassis with respect to the ground and therefore raise the boom to the required height.
This device is used to correct the level by 8° to the right and 8° to the left.



IMPORTANT

Using the device

Level the machine before raising the boom using the spirit level provided as reference.
The levelling operation can only be carried out with the boom less than 2 metres above the ground.
If the machine is not level, lower the boom again and repeat the levelling operation.

Take great care while moving the machine with the boom raised with or without load; if possible, carry out the load deposit operations with the machine stopped.

DRIVING INSTRUCTIONS

A - DRIVING SEAT

- Wear suitable clothing for driving the truck, and avoid loose clothing.
- Never drive with hands or footwear wet or dirty with grease.
- For greater comfort, adjust the driver's seat and assume a correct position.
- Always maintain the normal driving position.

Do not put your arms or legs and, in general, any part of the body, outside the lift truck driving seat.

- Always fasten the seat belt.
- The controls must never be used for purposes other than those for which they are meant (For example: Getting into and out of the lift truck, hang clothing, etc.).
- When the control instruments are provided with a forced operation device (lever lock) it is forbidden to leave the driver's seat without setting these commands in neutral.
- Never allow passengers on the lift truck or in the driver's seat.

B - BEFORE STARTING THE LIFT TRUCK

- If the lift truck is new, refer to Chapter: BEFORE STARTING UP A NEW LIFT TRUCK in part: 1 - SAFETY INSTRUCTIONS AND REGULATIONS.
- Check the condition and pressure of the tyres (See Chapter: SPECIFICATIONS in part: 2 - DESCRIPTION).
- Before startup, check the various levels:
  - . Combustion engine oil.
  - . Hydraulic tank oil.
  - . Gear oil.
  - . Cooling liquid.
  - . Brake fluid.
- Also check the lift truck for oil, fuel and liquid leakage.
- Ensure correct closure and locking of the engine hood.
- Whatever his level of experience as a lift truck operator, the user must familiarize himself with the position and use of the instruments and controls, before starting up the lift truck.

C - STARTING UP THE LIFT TRUCK

SAFETY REGULATIONS

The lift truck can only be started up or operated with the driver in the driver's seat, with the seat belt on and adjusted.

- Do not start the lift truck by towing or pushing it.

This operation can result in serious damage to the gears. If the lift truck is to be towed, turn the gear to neutral (See Chapter: H - OCASSIONAL MAINTENANCE in part :3 - MAINTENANCE).

INSTRUCTIONS

- Check to make sure the reverse gear lever is in neutral.
- Turn the ignition key to position I to allow electric contact.
- Check the fuel level on the indicator.
- Turn the ignition key to position II to allow preheating and wait for 15 seconds (if the environmental conditions require it).

Do not run the starter motor for more than 15 seconds, and allow preheating for 10 seconds between the various attempts made.

- Press the accelerator and turn the ignition key all the way, the engine must start. Release the ignition key and let the engine run at low speed.
- Before operating in very cold climatic conditions, wait for the combustion engine and the hydraulic systems to heat up correctly.
- Observe all the control instruments immediately after start up, with the engine hot, to detect and solve problems rapidly, if necessary.
- If one of the instruments shows a fault, switch the engine off and carry out the necessary operations immediately.

D - DRIVING THE LIFT TRUCK

SAFETY RULES

- Always carry out lift truck movements with the fork arms or accessory about 12 in. off the ground, i.e. in the transport position.
- Practice driving the lift truck on terrain where work is to be carried out.
- Check the service brakes and horn to make sure they are in perfect working order.
- Drive correctly at a speed suitable for the conditions and type of terrain.
- Slow down before turning.
- Have complete control over the lift truck and its speed, under all circumstances.
- Drive slowly over damp, slippery or uneven ground.
- Brake gradually, avoiding sudden braking.
- Use the lift truck reverse gear only with the machine stopped to avoid sudden movements.
- Always remember that a hydraulic steering is very sensitive to driving wheel movements, therefore steer gradually, without jerks.
- Never leave the engine running if the driver is not in the seat.
- Always look in the direction of movement and maintain correct visibility of the path. Use the side rearview mirrors frequently, and check their condition, cleaning and adjustment.
- Do not use the truck in dark or poorly lit places.
- At night, ensure that the lift truck is fitted with work lights. For more information regarding the options available, contact your agent or dealer.
- Drive around obstacles.
- Do not position yourself on a loading bridge unless you have checked to ensure that:
  . it is positioned and fixed correctly.
  . the means to which it is connected (wagon, truck, etc.) cannot move.
  . the bridge can handle the total weight of the lift truck and its load, if any.
  . the width of the bridge is suitable for the lift truck.
- Never enter a gangway, a flatbed or hoists, without first ensuring that these are suitable for the lift truck weight and dimensions and its load, if any, and are in good condition.

Pay special attention to loading wharfs, trenches, scaffolding, freshly dug ground or filled excavations.

- The road speed of the lift truck with load must never exceed 10 km/h, under any circumstances whatsoever.

INSTRUCTIONS FOR MOVEMENT

- Check the transmission oil level.
- Position the fork arms or accessory in the transport position, i.e. about 12 in. off the ground.
- Engage the selected gear (See Chapter: INSTRUMENTS AND CONTROLS in part: 2 - DESCRIPTION).
- Select the required steering mode.
- Set the reverse gear lever in the required position.
- Release the parking brake and accelerate slowly to allow the lift truck to move.

E - STOPPING THE LIFT TRUCK

SAFETY REGULATIONS

- Before stopping the lift truck after a heavy job, leave the combustion engine running for a few moments at minimum speed to let the cooling liquid and oil lower the temperature of the engine and transmission.

This precaution must be strictly observed in case of frequent stopping of the combustion engine.

- Never leave the ignition key in the lift truck in the absence of the driver.
- When the fork lift truck is stopped, lower the fork or accessory to the ground, set the reverse gear lever in neutral and apply the parking brake.
- If the driver needs to leave his seat even momentarily, the reverse gear lever must be turned to the neutral position and the parking brake must be applied.
- Make sure the lift truck is parked in such a manner that it does not obstacle movements and is at least one metre away from railway lines.
- If the lift truck is to be left parked for long periods, protect it from bad weather, particularly frost (Check the antifreeze level), close the rear window, lock the cab door and the engine hood.

INSTRUCTIONS FOR STOPPING THE LIFT TRUCK

- Park the lift truck on level ground or a slope less than 15 %.
- Set the reverse gear lever in the neutral position.
- Apply the parking brake.
- Retract the boom completely.
- Lower the fork arms or accessory to the ground, completely level.
- Switch the combustion engine off.
- Remove the ignition key.
- Check to make sure the door, rear window and engine hood are locked.

Before leaving the driver's seat, make sure all the operations for stopping the lift truck have been carried out correctly, to ensure your own safety and that of others.

F - DRIVING THE LIFT TRUCK ON THE ROAD

SAFETY REGULATIONS

- The general road traffic rules must be observed for driving a lift truck on roads.
- The lift truck must conform to the general road safety rules applicable in the country of use. Optional solutions are available, if necessary. Please contact your agent or dealer for more information.

It is forbidden to transport loads along roads and the accessories mounted on the lift truck must be fitted with equipment according to regulations or must be dismantled.

INSTRUCTIONS FOR DRIVING ALONG ROADS

- Check to make sure the flashing light is installed and in working order.
- Low beams must also be used on roads and at times when the use of visual signals or lights is not obligatory.
- Check the headlights, direction lights and windscreen wipers to make sure they are clean and in working order.
- Check the position of the rearview mirrors.
- Check wheel alignment and select the ROAD TRAVEL steering mode.
- Position the rear axle steering mechanical block.
- Make sure there is sufficient fuel.
- Fit all the accessories required for road travel (depending on the model and the country).
- Retract the boom and the accessory to about 12 in. off the ground.
- Level the machine with the chassis parallel to the ground using the inclination corrector.
- Exclude the operating system commands by means of the swicht “5P” (See Chapter: INSTRUMENTS AND CONTROLS in part: 2 - DESCRIPTION on page 18).
- The vehicle can only be used without load on roads.
- Do not transport company personnel as passengers on the vehicle.

Do not set the reverse gear in neutral while driving on roads to have the lift truck engine brake always ready for use.

G - DRIVING THE LIFT TRUCK WITH TRAILER ON ROADS

- For using a trailer, observe the regulations applicable in the country of use (maximum permitted speed, braking system, maximum trailer weight, etc.).
- Remember to connect the lift truck electrical system to that of the trailer.
- Do not use a trailer if the unit weight of the load is greater than that permitted by road rules.
- Do not use a braked trailer if the lift truck is devoid of a trailer braking system.
- Remember to connect the lift truck braking system to that of the trailer.
- The permitted total carriage road weight must not exceed the maximum limit authorized by the manufacturer (See lift truck manufacturer's plate).

H - DRIVING THE LIFT TRUCK WITH A FRONT ACCESSORY ON ROADS

- For driving the truck with an accessory on roads, consult the regulations applicable in the country of use.
- The accessory must not exceed the maximum width of the lift truck.
- Do not block the area illuminated by the front headlights.
- Fit the covers on the accessories installed, consult the regulations applicable in the country of use.
- If necessary, place the spacer block on the lift cylinder.
- The front dimensions of the fittings must be marked on the three sides by means of alternate red and white retroreflecting stripes, 10 cm high, inclined at 45° (follow the indications specific to each fitting).

IF NECESSARY, CONTACT YOUR AGENT OR DEALER.

HANDLING INSTRUCTIONS

A - GENERAL INFORMATION

- Check the lift truck accessories to make sure they are in working order.
- Do not carry out operations which exceed the capacity of the lift truck or the accessory.
- Do not increase the counterweight whatever the accessory used.
- Do not transport or lift persons using the lift truck, unless the vehicle is equipped for the purpose and is accompanied by a conformity certificate regarding lifting passengers.
- Avoid travelling long distances in reverse gear.
- Carry out slow, gradual movements for raising and lowering the telescopic boom; even without load.

B - ACCESSORY

- Check to make sure the accessory is installed and locked correctly on its support.
- Comply with the load diagram limits.
- Check to make sure the pallets, crates, etc., are in good condition and suitable for the load to be lifted.
- Keep the fork arms perpendicular to the load to be lifted, taking into account the position of the load's centre of gravity.
- Never lift a load using a single fork arm.
- Never lift a slung load by a single fork arm or using a plank. For more information regarding the optional solutions available, please contact your agent or dealer.
- If the accessory is not used, keep it horizontal on the ground *(Prop unstable accessories properly).*
- Check to make sure the hydraulic quick-release couplings of the accessory circuit are clean and protected.
- Before each change of accessory operated hydraulically, prevent deterioration of the quick-release hydraulic couplings by:
  - *switching off the I.C.engine*
  - *turn the contact key to position I*
  - *drain pressure from the circuit by means of the knob*

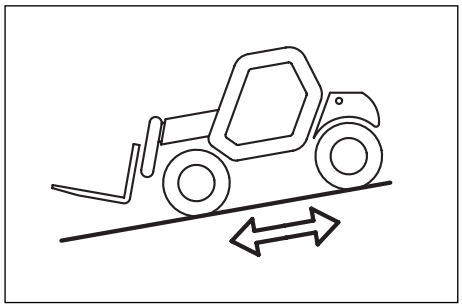
C - ENVIRONMENTAL OPERATING CONDITIONS

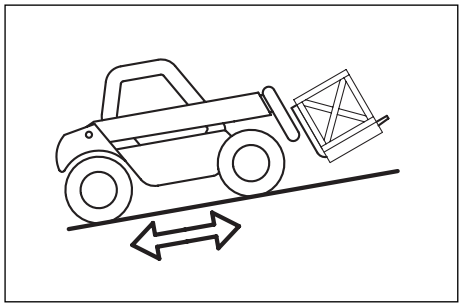
- Check to make sure there is adequate lighting.
- Take care while lifting a load, making sure there is nothing or no one that can be an obstacle to the operations being carried out correctly and avoid false movements.
- If work is being carried out near overhead electric lines, make sure the safety distance between the operating area and the power line is sufficient.

Contact your local power supply Company for information.

You run the risk of being electrocuted or seriously injured if you work or park the lift truck very close to electric cables. It is therefore important to make sure the safety rules applied at the work site conform to the local regulations applicable for the type of operations carried out in the vicinity of electric lines.

- Do not let anyone approach the lift truck operating area or walk under a load.
- For using the lift truck on sloping ground, before raising the boom, check to make sure the truck is horizontal. Lift trucks provided with level correctors and/or stabilisers can be used on transverse slopes, as long as this inclination is corrected (See paragraph: G - HORIZONTALITY OF LIFT TRUCK in the HANDLING A LOAD Chapter).
- Moving on longitudinal slopes:
  - Move forward and brake gently.
  - Movement without load: The fork arms and accessory facing downwards.
  - Movement with load: The fork arms and accessory facing upwards.
- Check to make sure the scaffolding, loading surface or the stack can support the load.
- Ensure the stability and compactness of the ground before depositing the load.





D - HANDLING OPERATIONS

- Always observe the safety rules, always transport loads balanced and placed correctly to avoid risk of tilting over.
- Insert the forks all the way under the load and move to the transport position (The forks 12 in. off the ground, the boom completely retracted and the fork arms inclined backwards).
- For obvious reasons of stability of the lift truck and good visibility, move the lift truck only when the boom is in the transport position.

- Move the lift truck with the boom raised only in exceptional cases, and operate with great care, at very low speeds and by braking very gently. Make sure visibility is good, and have someone else guide you if necessary.

- Keep the load stable when the lift truck is moving.
- Never move too fast, and avoid braking suddenly with a load.
- During handling operations, drive the lift truck at very low speeds.
- Supervise the load, especially on bends, and in particular if it is bulky.
- A sling must be used for unstable loads.
- Handle loads carefully, at low speeds, without jerks, especially while lifting to great heights and with considerable jerks.

In case of strong winds or a storm, avoid movements that may be potentially dangerous for the stability of the lift truck and the load.

- Do not change direction suddenly and at high speeds.

If the lift truck tilts over, do not try to get out of the cab during the accident.
ALWAYS DRIVE WITH THE SAFETY BELT ON. STAY INSIDE THE CAB WITH THE SAFETY BELT ON AS THIS IS THE BEST WAY TO PROTECT YOURSELF.

- Use the parking brake to deposit or raise a difficult load or on sloping ground.
- Never ever leave the truck parked with a raised load.
- Never leave the truck, whether empty or with load, with the parking brake applied, on a slope exceeding 15 %.

E - VISIBILITY

- Always ensure good visibility of the path, both direct and indirect with panoramic rear view mirrors, to check for the presence of a person, animal, holes, obstacles, change in slope, etc.
- There is possible of the visibility being reduced on the right side when the boom is raised: therefore ensure good visibility of the path before raising the boom and starting movements.
- If visibility in front is not sufficient owing to the size of the load, move in reverse. This is an exceptional operation and must only be used for very short distances.
- Ensure good visibility (Clean windows, sufficient lighting, rearview mirror adjusted, etc.).
- The lift truck signals and lights must be suitable for the conditions of use. Standard machine lighting is not sufficient for use in poorly lit areas or at night. Various options are available in addition to the standard equipment mounted on the lift truck. Please contact your agent or dealer for more information.

CONTACT YOUR AGENT OR DEALER, IF NECESSARY.

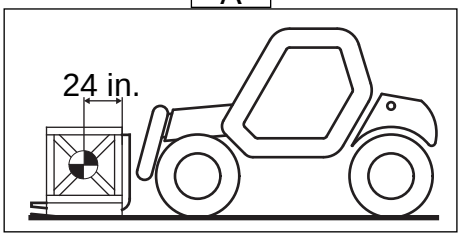
HANDLING A LOAD

A - WEIGHT OF THE LOAD AND THE CENTRE OF GRAVITY

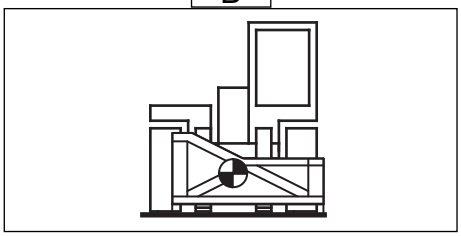
Do not raise or transport a load heavier than the rated capacity of the lift truck or accessory.

- The weight of the load and the centre of gravity must be known before lifting the load.
- The load chart relative to your lift truck is valid for a load for which the centre of gravity is 24 in. from the fork heel (Fig. A). For a centre of gravity that is farther away, contact your agent or dealer.
- For uneven loads, determine the centre of gravity transversally before making each movement (Fig. B).

A



B

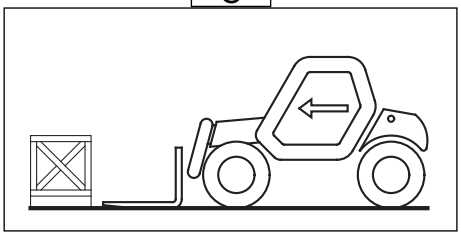


For loads with mobile centre of gravity (for example: liquids), take into account the variations in centre of gravity to determine the load to be lifted (contact your agent or dealer), and take great care to limit these variations as far as possible .

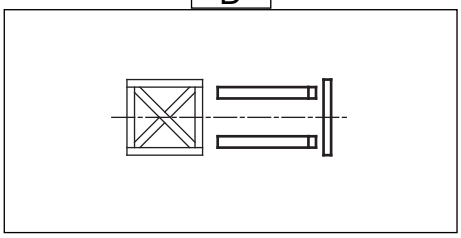
B - PICKING UP A LOAD FROM THE GROUND

- Bring the lift truck perpendicularly close to the load, with the boom retracted and the forks horizontal (Fig. C).
- Adjust the difference and centring of the forks with respect to the load (Fig. D) (For information regarding the optional solutions available, please contact your agent or dealer).

C



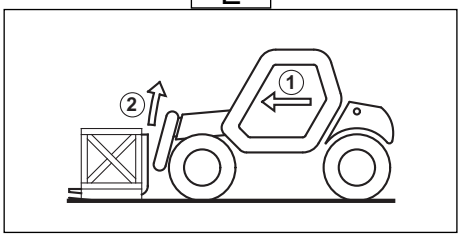
D



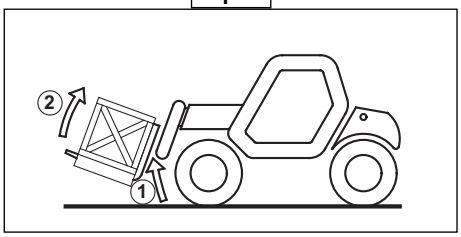
Pay attention to pinching or crushing of the limbs during manual adjustment of the forks. Always maintain the same distance between the forks and central axis of the plant to ensure perfect load stability .

- Move lift truck (1) forwards slowly, and bring the forks against load (Fig. E), raise boom (2) slightly, if necessary, while picking up the load.
- Apply the parking brake and set the reverse gear lever in the neutral position.
- Raise load (1) carefully, incline fork arms (2) backwards in the transport position (Fig. F).

E



F



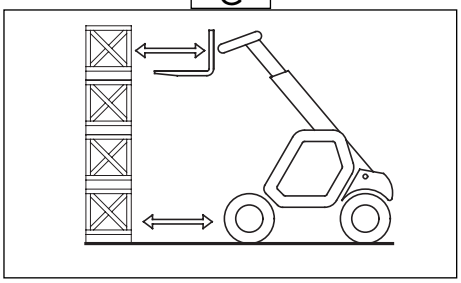
Incline the load backwards sufficently to ensure stability (load lost during braking) taking care to maintain the balance.

C - PICKING UP A LOAD FROM HEIGHTS ON TYRES

Do not pick up a load unless the lift truck is on level ground (See paragraph: G - HORIZONTALITY OF THE LIFT TRUCK in Chapter: HANDLING A LOAD).

- Check to make sure the forks pass easily under the load.
- Raise and extend boom (1) (2) to position the forks level with the load. If necessary, move lift truck (3) (Fig. G) forwards, gently and carefully (See paragraph: E - VISIBILITY in Chapter: HANDLING INSTRUCTIONS relative to path visibility) .

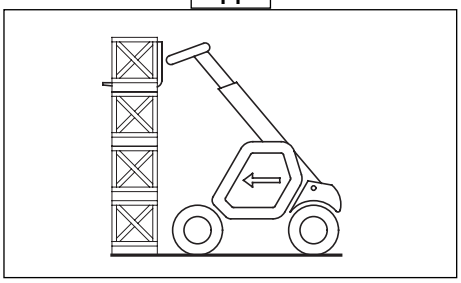
G



Always maintain the necessary distance to insert the fork under the load, between the stack and lift truck (Fig. G), using the minimum possible length of the boom.

- Bring the forks against the load (Fig. H). Apply the parking brake and set the reverse gear lever in neutral.
- Lift load (1) slightly and incline fork arm (2) backwards to stabilize load (Fig. I).

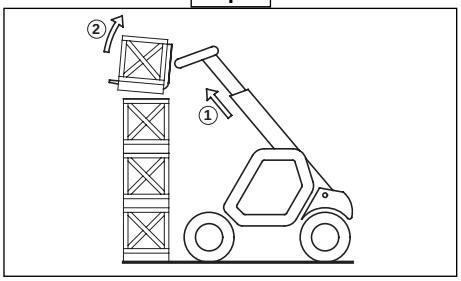
H



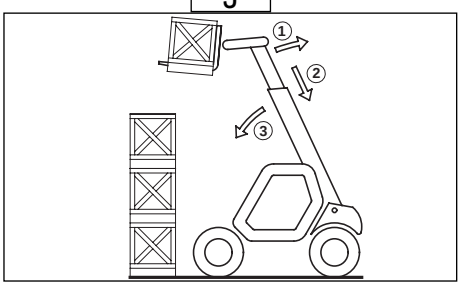
Incline the load backwards sufficently to ensure stability (load lost during braking) taking care to maintain the balance.

- If possible, lower the load without moving the lift truck. Raise boom (1) to move the load away, retract (2) and lower boom (3) to bring the load to the transport position (Fig. J).
- If this is not possible, move the lift truck backwards. Move very gently and carefully (See paragraph: E - VISIBILITY in Chapter: HANDLING INSTRUCTIONS concerning visibility of the path), move lift truck (1) away from the load, retract (2) and lower boom (3) to bring the load to the transport position (Fig. K).

I



J



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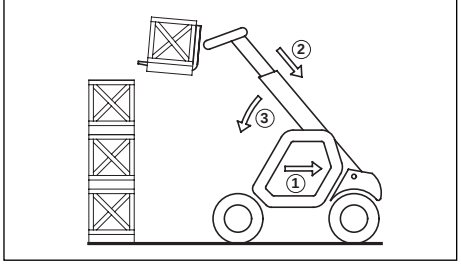
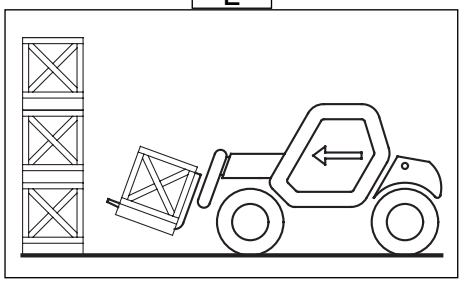


D - DEPOSITING A LOAD AT A HEIGHT ON TYRES

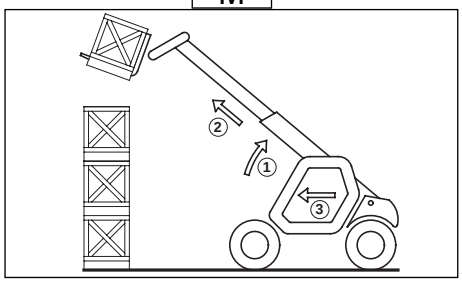
Do not deposit the load unless the lift truck is non a level surface (See paragraph: G - HORIZONTALITY OF THE LIFT TRUCK, in chapter: HANDLING A LOAD).

- Bring the load to the transport position in front of the stack (Fig. L).
- Raise and extend boom (1) (2) so that the load is above the stack, moving lift truck (3) forwards if necessary (Fig. M), gently and carefully (See paragraph: E - VISIBILITY in chapter: HANDLING INSTRUCTIONS regarding visibility of the path). Apply the parking brake and set the reverse gear lever in neutral.
- Position the load horizontally and place it on the stack, lower and retract boom (1) (2) to position the load correctly (Fig. N).
- Release the forks, retracting and raising boom (3) alternately (Fig. N), or, if possible, reversing the lift truck (3) (See paragraph: E - VISIBILITY in chapter: HANDLING INSTRUCTIONS relative to visibility of the path). Then bring the boom to the transport position.

L



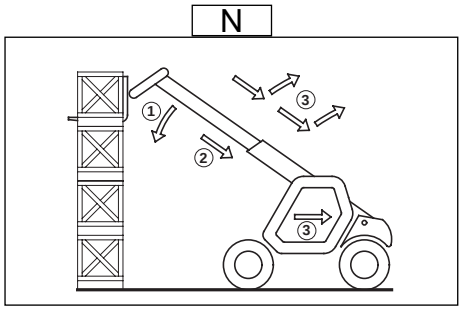
M



E - PICKING UP A LOAD WITHOUT PALLET

- Incline fork arm (1) forwards and extend boom (2) at the same time inclining fork arm (3) backwards to insert the forks under the load (Fig. O) taking care to ensure the longitudinal and lateral stability of the load. Wedge the load, if necessary.

N



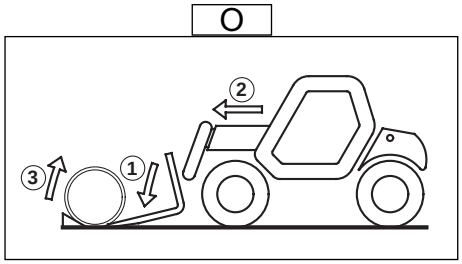
F - LOAD SAFETY CONTROL DEVICE

- Always observe the load status indicator during handling operations.

When the load status indicator enters alarm condition, do not:

A - Extend the boom.
B - Lower the boom.

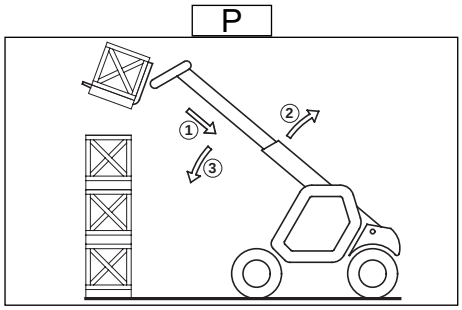
O



In the event of a load status indicator alarm, carry out the the operations described below (Fig. P) :

1 - Retract the boom all the way.
2 - Raise the boom if necessary.
3 - Lower the boom to deposit the load.

P



The device reading may be false if the steering is turned all the way or if the rear axle oscillates all the way. Before lifting a load, always make sure the steering is not turned all the way and that the rear axle is not completely oscillated.

G - HORIZONTALITY OF THE LIFT TRUCK

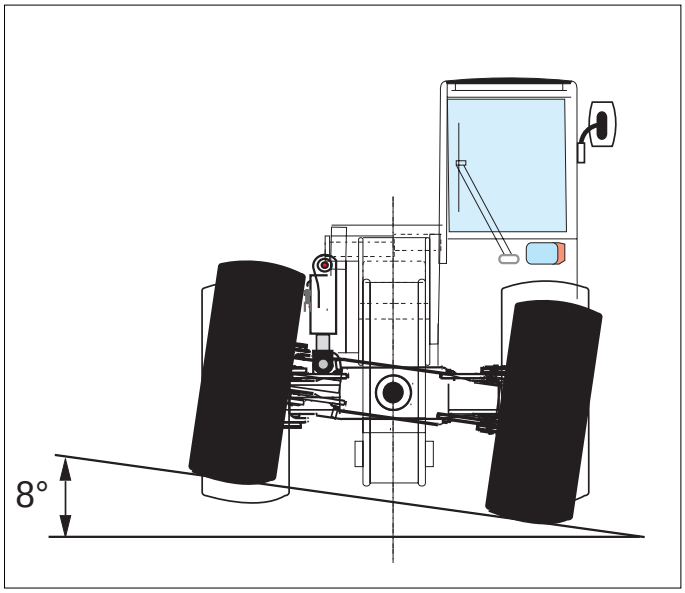
FORK LIFT TRUCK WITH LEVELLING

Apart from the transverse slope of the ground, other parameters can affect the horizontality of the lift truck.

- The condition and pressure of the tyres.
- Stability of the ground.
- Load balance.
- Strong wind and storm.

- Correct the inclination by acting on the hydraulic control and check the levelling using the spirit level before raising the boom (See chapter: INSTRUMENTS AND CONTROLS, in part: 2 - DESCRIPTION).

*Before each movement, check the conditions listed above and make sure the lift truck is **perfectly horizontal** (check the spirit level).*



INSTRUCTIONS FOR LIFT TRUCK MAINTENANCE

MAINTENANCE INSTRUCTIONS

A - GENERAL INSTRUCTIONS

- Read and understand the instruction manual.
- Switch off the combustion engine before carrying out any operation on the lift truck.
- Wear clothing suitable for the lift truck maintenance operations, and avoid jewellery and loose clothing. Tie and protect your hair, if necessary.
- Make sure the area is sufficiently ventilated, before starting up the lift truck.

Pay special attention to disposal of consumables and worn parts, ensuring this is done in maximum safety and in an eco-friendly manner.

- Carry out the necessary repairs, however minor, immediately.
- Repair leaks, however minimum, immediately.
- Do not attempt to slacken the unions, hose pipes or hydraulic components with the circuit pressurized.

Modifying the adjustments and dismantling the balancing valves and safety valves sometimes fitted on the lift truck jacks can be dangerous. A balancing valve must only be dismantled with the lift jack concerned deactivated and the pressure discharged from the hydraulic circuit.
This operation must only be performed by authorized personnel.

- Never smoke or expose the lift truck to naked flames with the fuel tank open or while it is being filled.
- Take care as there is risk of burns (Exhaust, radiator, combustion engine, etc.).
- Disconnect the negative wire terminal (-) of the battery before carrying out welding operations on the lift truck.
- For electric welding on the lift truck, place the negative welding gun on the part to be welded, to prevent strong currents from passing through the alternator.

B - MAINTENANCE

- Maintenance and maintaining the conformity of the lift truck are obligatory.
- Carry out daily maintenance (See Chapter: A - DAILY OR EVERY 10 HOURS OF SERVICE under: 3 - MAINTENANCE).
- Do not operate the combustion engine without the air filter or if there is oil, water or fuel leakage.

Wait for the combustion engine to cool down before removing the radiator cap.

Replace the filter cartridges (See replacement frequency in Chapter FILTER ELEMENTS AND BELTS in: 3 - MAINTENANCE).

C - LEVELS

- Use the recommended lubricants (Never use used lubricants).
- Do not fill the fuel tank with the combustion engine running.
- Refuelling operations must be carried out exclusively in the areas meant for the purpose.

D - WASHING

- Clean the lift truck or at least the part concerned, before every operation.
- Remember to shut the cab door and the rear window.
- During washing, avoid wetting the electrical joints, components and connections.

If necessary, protect components which run the risk of being damaged by water, steam and detergents, especially the electric components and connections and the injection pump.

- Clean the lift truck to remove all traces of fuel, oil and grease.

FOR ALL OPERATIONS THAT ARE NOT INCLUDED UNDER SCHEDULED MAINTENANCE, CONTACT YOUR AGENT OR DEALER.

BEFORE STARTING UP A NEW LIFT TRUCK

INTRODUCTION

- Our lift trucks are designed to ensure the driver simple manoeuvres and easy maintenance.
- However, before starting up the truck for the first time, the user must have read and understood this manual which is prepared to provide all the information concerning driving and maintenance. By complying with these indications, the user will be able to get the best performances from his vehicle.
- Before using the lift truck, the user must become familiar with the position and functions of the various instruments and controls.

Never start up a lift truck without having made the following inspections :

GREASING

- Check the various lubrication points and different levels, consult: MAINTENANCE SCHEDULE under: 3 - MAINTENANCE and proceed with topping up, if necessary.

The trucks are delivered filled with lubricant at the factory, using lubricant suitable for average user conditions, i.e. -15°C to + 35°C. For use in extreme conditions, before start up, drain and fill with fresh lubricant using the lubricant suitable for such temperatures. The same applies to cooling liquids (Contact your agent or dealer for more information).

DRY AIR FILTER

- Make sure the filter is in good condition and not fouled.
- Tighten the bolts, if necessary.

Never use the lift truck without its air filter or if the filter is damaged.

COOLING CIRCUIT

- Never start the truck without checking the cooling liquid level.

HYDRAULIC CIRCUIT

- Check to make sure there is no oil leakage on the connections, hose pipes, pipes and unions. Tighten or check the defective connections, if necessary.
- Check the oil level in the tank.

BRAKING SYSTEM

- Check to make sure there is no oil leakage on the connections, hose pipes, pipes and unions. Tighten or check the defective connections, if necessary.
- Check the oil level in the tank.

Use only the recommended types of oil as otherwise there is risk of damaging the braking system (see Chapter on LUBRICANTS in part: 3 - MAINTENANCE).

WHEELS AND TYRES

- Check to make sure the wheel nuts are tightened correctly (See Chapter: A - DAILY OR EVERY 10 HOURS OF SERVICE in part: 3 - MAINTENANCE) and check the tyre pressure (See chapter: SPECIFICATIONS in part: 2 - DESCRIPTION).

FUELLING SYSTEM

- Check to ensure that the fuel lines are sealed tight.
- If necessary, drain the fuel filter and fuel feed system.

ELECTRICAL CIRCUIT

- Check the level of electrolyte in the battery (See chapter: B - EVERY 250 HOURS OF SERVICE in part: 3 - MAINTENANCE).
- Check the various components of the electrical circuit, the relative connections and contacts.

CONTACT YOUR AGENT OR DEALER, IF NECESSARY.

INTRODUCTION TO SAFETY

2 - DESCRIPTION

INTRODUCTION TO SAFETY

SPECIFICATIONS

Engine (E2)

- Type	PERKINS 1104D-E44TA
- Number of cylinders	4
- Strokes	4
- Injection system	direct
- Firing order	1.3.4.2.
- Displacement	4400 cm^3
- Bore	105 mm
- Stroke	127 mm
- Compression ratio	16.2 : 1
- Rated speed	2200 min^{-1}
- Idle speed	800 min^{-1}
- Power rating ISO/TR 14396	144 HP / 106 kW
- Maximum torque	556 Nm 1400 min^{-1}

Cooling System

- Type	Water cooled
- Intake fan	1760 min^{-1}
No. of blades	7
- Diameter	550 mm
Thermostat	
- Complete opening	82° C

Electrical System:

- Earth	Negative
- Battery	12 v - 140 Ah
- Alternator	12 v - 120 A
- Voltage regulator	built into alternator
- Starting	12 v

Brakes:

- Type	Disk in oil bath
- Service brake	Pedal-operated, acts on front and rear wheels
- Parking brake	Hydraulic, with negative action, acts on front axle service brakes

Transmission Unit

- Type	Hydrostatic
- Type	with continuous speed adjustment. Variable displacement pump and engine with inching
- Gear	Hydraulic operation
- No. of forward gears	2
- No. of reverse gears	2
- Reverser	Electrohydraulic

Hydraulic circuit

Boom movements

- Type of pump	with pistons
- Flow rate	140 l/min
- Pressure	275 bar

Steering circuit

- Type of pump	Load sensing
- Flow rate	140 l/min
- Pressure	175 bar

Levelling circuit

- Type of pump	with gears
- Flow rate	25 l/min
- Pressure	205 bar

Cooling system

Water and hydraulic oil by means of fan with hydraulic motor

- Type of pump	with gears
- Flow rate	25 l/min
- Pressure	175 bar

Intercooler

- Electric fans	N° 2

Front and rear tyres:

Standard:

- Type	18x22,5 16PR MPT-06 TL
- Operating pressure	5 bar

Optional:

- Type	445/65 R22,5 AR01
- Operating pressure	8 bar

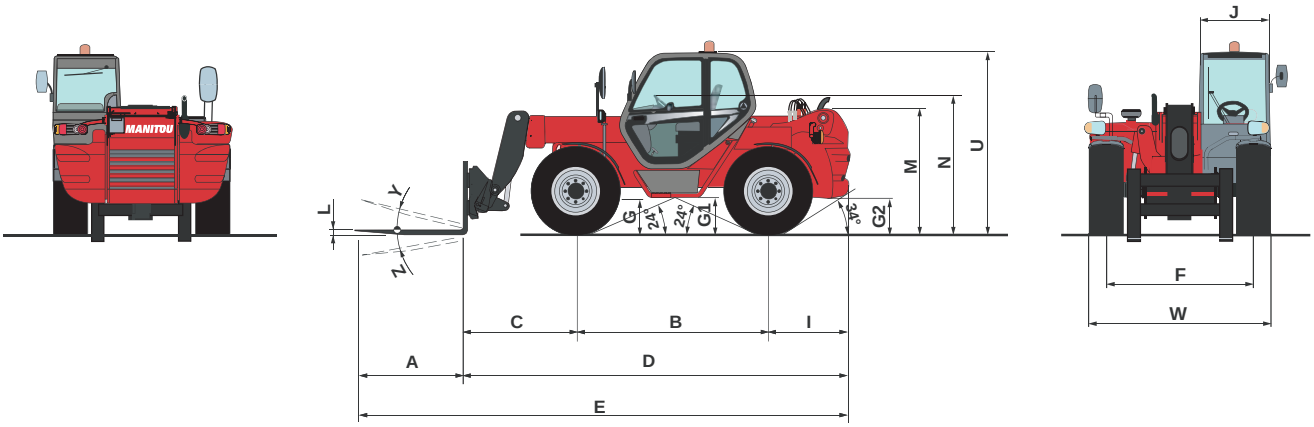
Specifications MHT 860 L *Evolution*

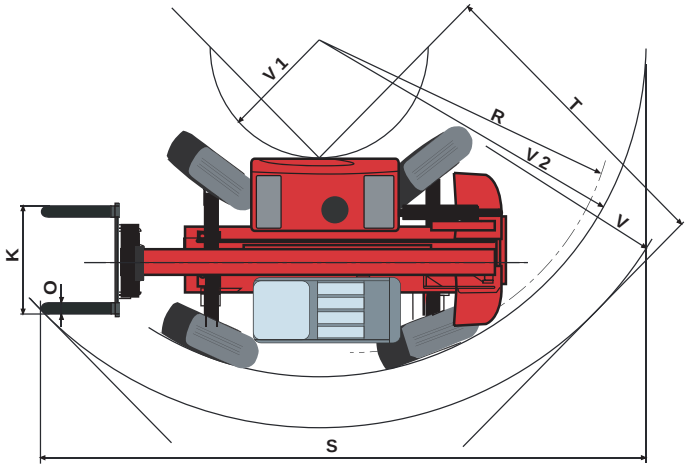
- Maximum speed	
Forwards/Backwards - without load	30 km/h
Forwards/Backwards - with load	10 km/h
- Lifting speed	
without load with boom retracted	30.6 m/min (9.8 sec)
- Descent speed without load	
with boom retracted	38.5 m/min (7.8 sec)
- Extension speed without load	17 m/min (11.3 sec)
- Boom retraction speed without load	28.6 m/min (6.7 sec)
- Upward inclination time without load	33 °/sec (4.1 sec)
- Downward inclination time without load	38.5 °/sec (3.5 sec)
- Fork dimensions	
(length x width x thickness)	1200 x 200 x 60 mm
- Max. boom ext. distance from fork	1750 mm
- Distance from centre of gravity	24 in.
- Standard lifting height	8100 mm
- Rated capacity with standard equipment	6000 kg
- Weight with standard equipment and forks	11580 kg
- Distribution of wt. along axle with standard equipment	
Front axle - no load	4400 kg
Rear axle - no load	7180 kg
- Weight loaded with standard equipment and forks	17580 kg
- Wt. loaded with boom retracted and forks 20 cm off the ground	
Front axle	/ kg
Rear axle	/ kg
- Towing capacity	
No load	9200 daN
With load	10500 daN
- Vibrations	
Acceleration of upper limbs	≤ 2.5 m/s²
Acceleration of body (feet or seated part)	≤ 0.5 m/s²
- Noise	
The noise level guaranteed	LwA 105 dB
(in accordance with Directive 2000/14/CE modified by Directive 2005/88/CE)	
Noise level in driving seat (in accordance with EN 12053)	LpA 80.8 dB

Specifications MHT 950 L Evolution

- Maximum speed	
Forwards/Backwards - without load	30 km/h
Forwards/Backwards - with load	10 km/h
- Lifting speed	
without load with boom retracted	30.6 m/min (10.8 sec)
- Descent speed without load	
with boom retracted	38.5 m/min (8.6 sec)
- Extension speed without load	17 m/min (12.7 sec)
- Boom retraction speed without load	28.6 m/min (7.5 sec)
- Upward inclination time without load	33 °/sec (4.1 sec)
- Downward inclination time without load	38.5 °/sec (3.5 sec)
- Fork dimensions	
(length x width x thickness)	1200 x 150 x 50 mm
- Max. boom ext. distance from fork	1320 mm
- Distance from centre of gravity	24 in.
- Standard lifting height	8800 mm
- Rated capacity with standard equipment	5000 kg
- Weight with standard equipment and forks	10650 kg
- Distribution of wt. along axle with standard equipment	
Front axle - no load	3970 kg
Rear axle - no load	6680 kg
- Weight loaded with standard equipment and forks	15650 kg
- Wt. loaded with boom retracted and forks 20 cm off the ground	
Front axle	/ kg
Rear axle	/ kg
- Towing capacity	
No load	8500 daN
With load	10500 daN
- Vibrations	
Acceleration of upper limbs	≤ 2.5 m/s^2
Acceleration of body (feet or seated part)	≤ 0.5 m/s^2
- Noise	
The noise level guaranteed	LwA 105 dB
(in accordance with Directive 2000/14/CE modified by Directive 2005/88/CE)	
Noise level in driving seat (in accordance with EN 12053)	LpA 80.8 dB

DIMENSIONS MHT 860 L Evolution

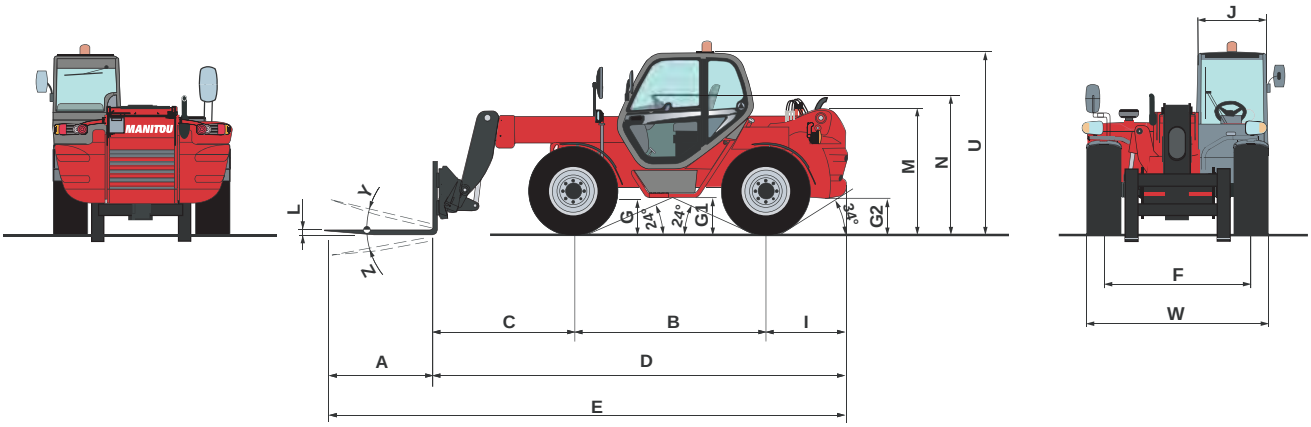


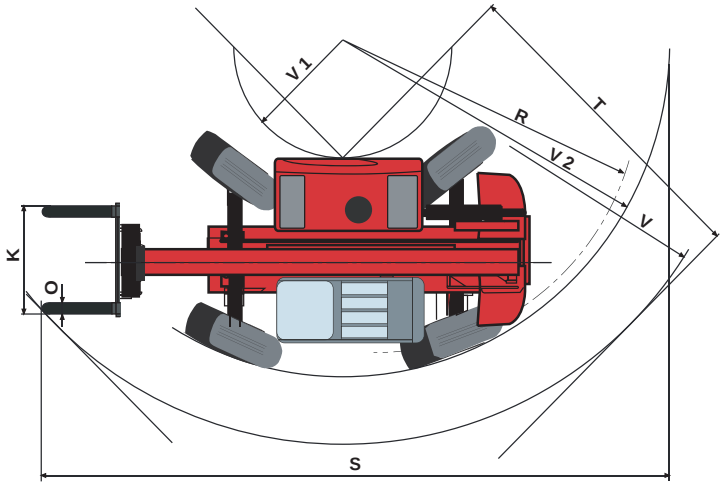


A	1200
B	2730
C	1540
D	5365
E	6565
F	1930
G	410
G1	450
G2	410
I	1095
J	865
K	1750
L	60
M	1700
N	1845
O	200
R	3800
S	8135
T	4360
U	2460
V	5330
V1	1375
V2	4035
W	2400
Y	11°
Z	123°

mm

DIMENSIONS MHT 950 L Evolution



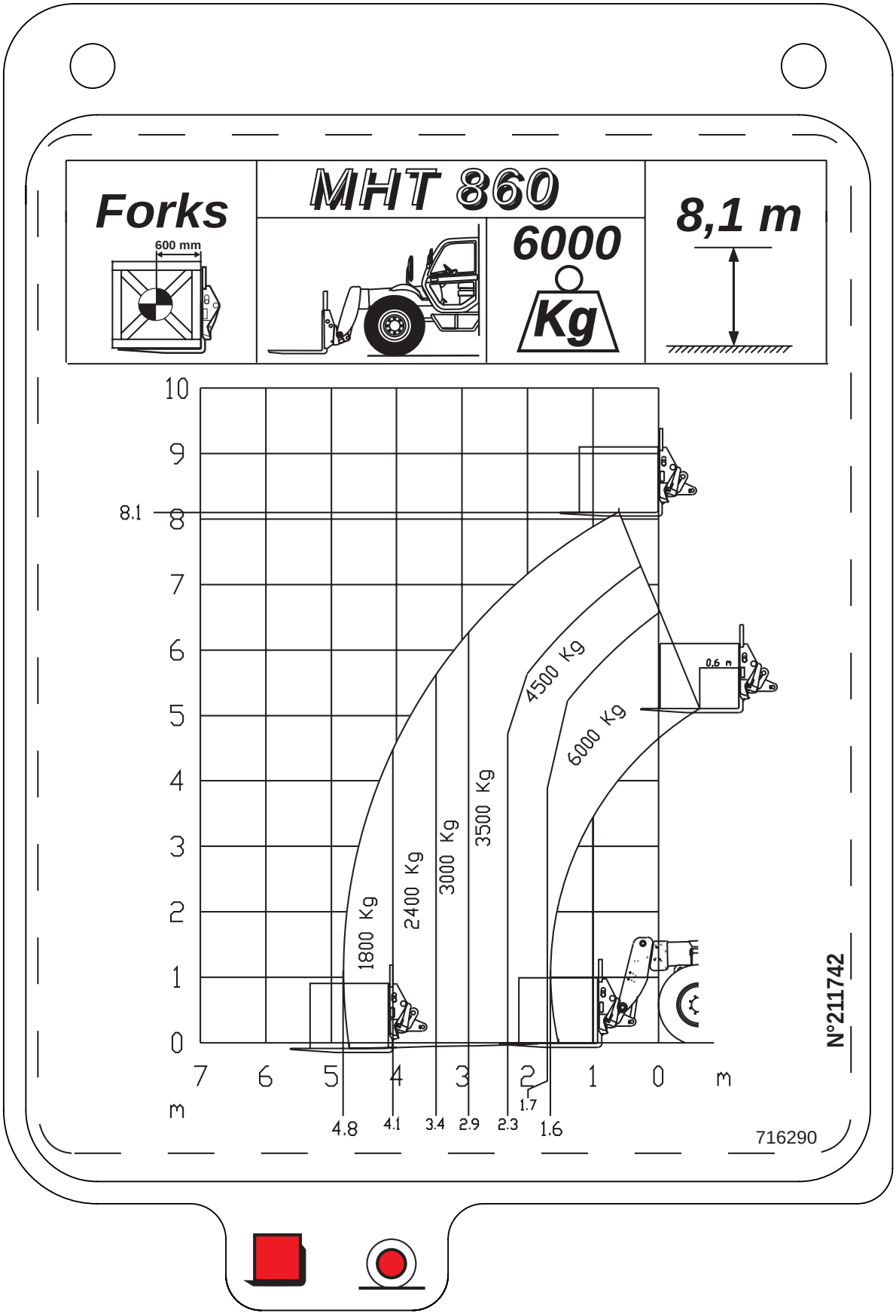


A	1200
B	2730
C	1940
D	5765
E	6965
F	1930
G	410
G1	450
G2	410
I	1095
J	865
K	1320
L	50
M	1700
N	1845
O	150
R	3800
S	8535
T	4545
U	2460
V	5520
V1	1375
V2	4035
W	2400
Y	11°
Z	125°

mm

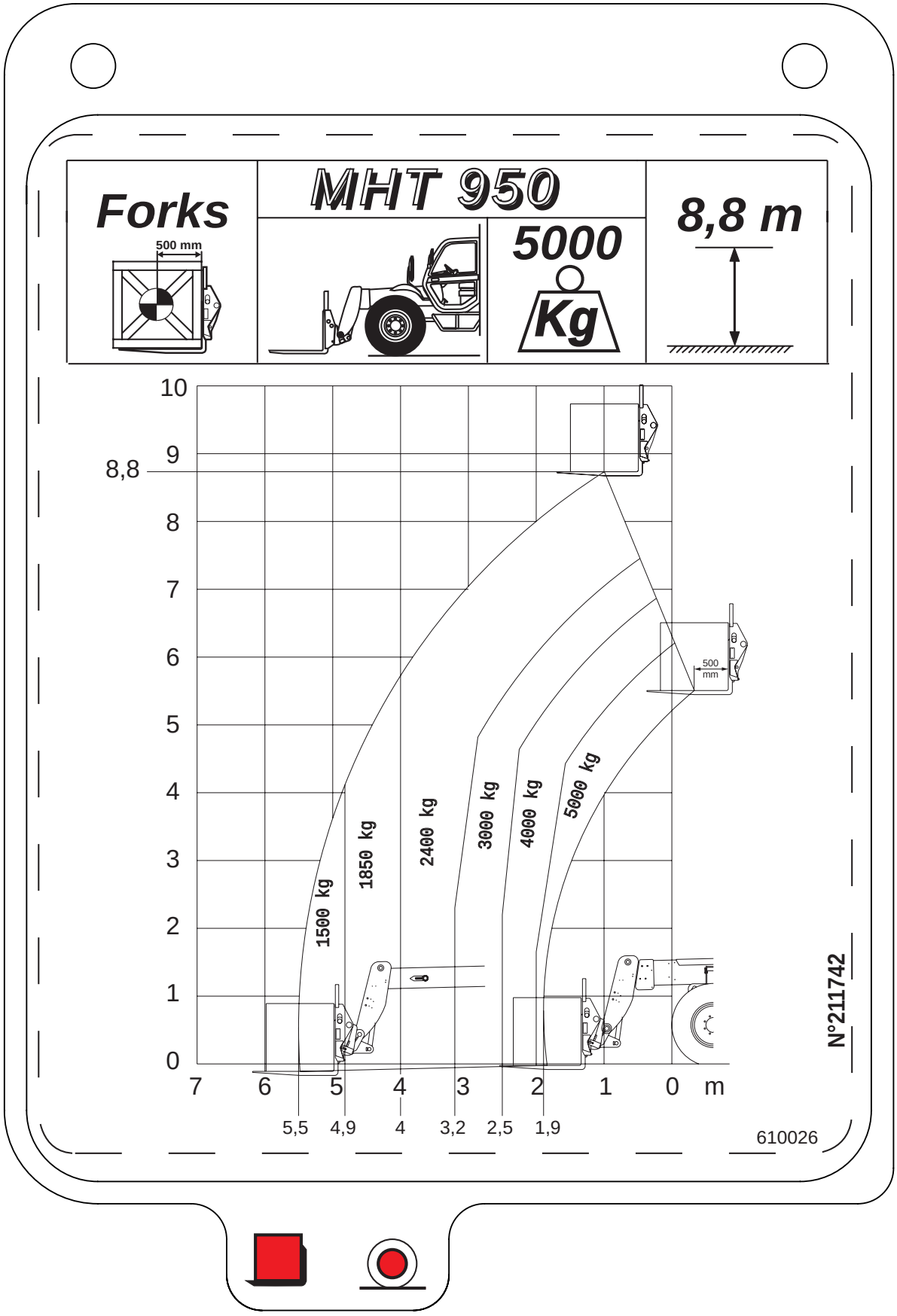
LOAD CHART MHT 860 L Evolution

LOAD CHART WITH FORKS

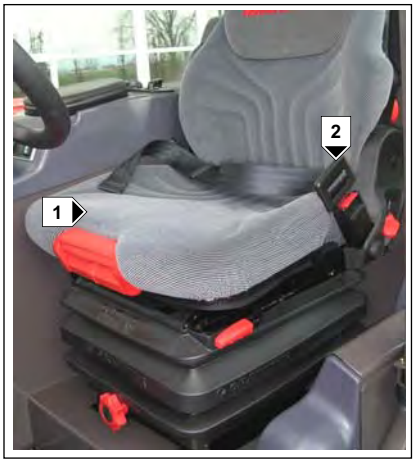


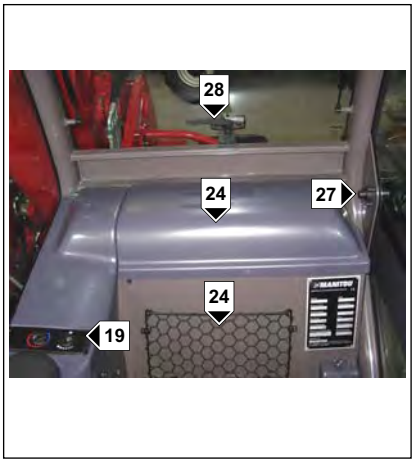
LOAD CHART MHT 950 L Evolution

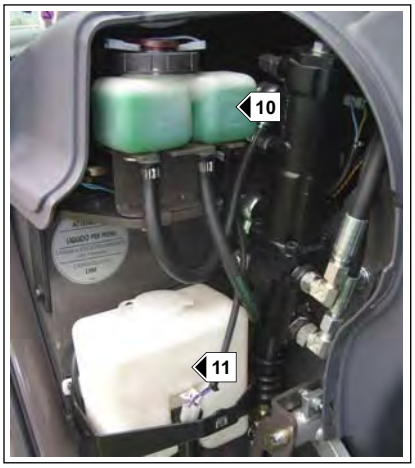
LOAD CHART WITH FORKS



INSTRUMENTS AND CONTROLS







DESCRIPTION

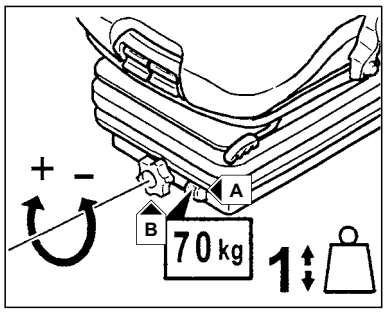
1 - Operator seat
2 - Safety belt
3 - Control instruments and indicator lights panel
4 - Load status control and safety device
4a - Safety system exclusion key
5 - Switches panel
6 - Lights control lever, horn and direction indicators
7 - Anterior windscreen and rear window wiper-washer control lever
8 - Key switch
9 - Access guard to brakes oil tank and windscreen-wiper liquid tank.
10 - Brakes oil tank
11 - Windscreen-wiper liquid tank
12 - Guard for access to fuses and relays
13 - Accelerator pedal, service brake and inching
14 - Reversing control
15 - Electro-hydraulic movements controls
15a - Decompression of optional circuit
16 - Red emergency stop pushbutton
17 - Description of controls and load diagrams
18 - Level gauge
19 - Heating controls
20 - Air conditioning (optional)
21 - Air inlet nozzles
22 - Ceiling light
23 - Sunshade (optional)
24 - Tools and documents compartment
25 - Cigarette lighter
26 - Cab door closure
27 - Upper half-door lock
28 - Rear window opening lever
29 - Tow hook
30 - Head lights
31 - Tail lights
32 - Rotary warning beacon
33 - Steering wheel adjuster lever

RECOMMENDATIONS

However experienced the driver may be in this field, he must become fully familiar with the location and function of all the instruments and controls before operating the lift truck.
When the contact key is turned without switching on the diesel engine, an instruments test is carried out automatically: all the indicators light up and the buzzer starts sounding. These stop when the diesel engine is switched on.
Check all instruments on board immediately after having started the truck when the engine has warmed up and at regular intervals during use. This will help identify faults immediately and proceed with prompt remedies. If an instrument fails to give the right indication, switch off the engine and take the necessary measures to restore correct operation.

Using the lift truck without due regard for the above recommendations could be dangerous.

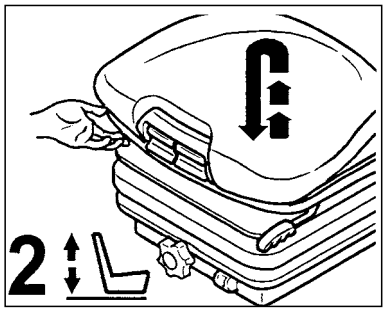
1 - DRIVER'S SEAT (STANDARD)



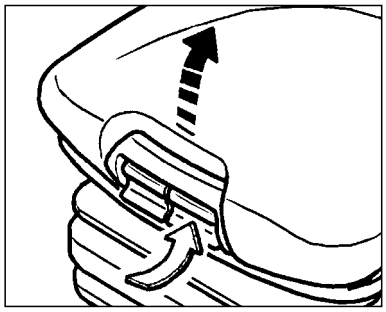
THE SEAT CAN BE ADJUSTED IN DIFFERENT WAYS TO MAKE IT MORE COMFORTABLE.

ADJUSTING THE WEIGHT
Adjust the weight with the seat empty.
- Take notch "A" of the seat as reference.
- Turn knob "B" according to the driver's weight.

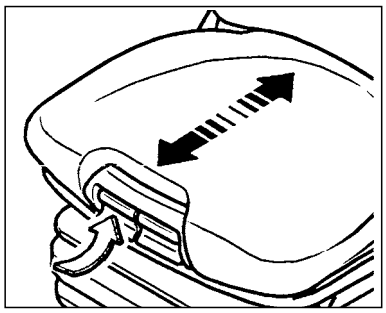
NOTE: To avoid health problems, before starting up the lift truck, check the weight and adjust if necessary.



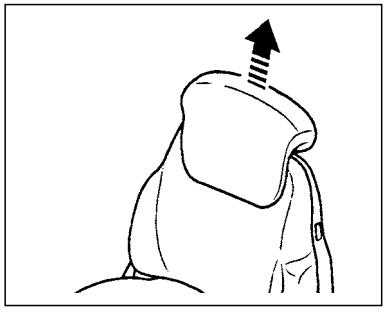
ADJUSTING THE HEIGHT
Bring the seat to the required position until it clicks into place. If the seat is raised beyond the last click, it returns to the lower position.



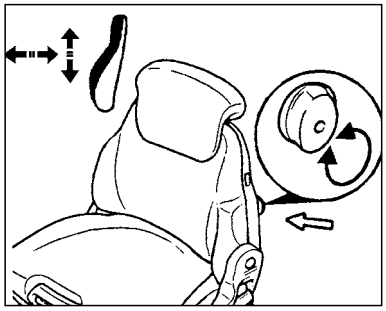
ADJUSTING THE INCLINATION
The seat inclination can be adjusted to suit individual needs.
- Press the LH button and simultaneously push or release the seat to get the correct position.



ADJUSTING THE DEPTH
The seat depth can be adjusted to suit individual needs.
- Press the RH button and push the seat forwards or backwards to get the correct position.



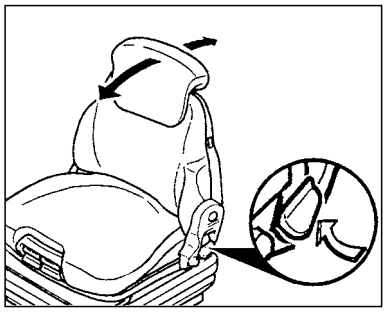
BACKREST EXTENSION
- The height of the backrest extension can be adjusted by raising it until it clicks to a stop (you can hear the clicks).
- The backrest extension can be removed by pulling it beyond the last stop notch.



LUMBAR ADJUSTMENT
This helps to improve comfort and makes it possible for the driver to move freely in the seat.
- Turn the knob to the right or the left to adjust the height and depth of thelum-bar support.

ADJUSTING THE BACKREST

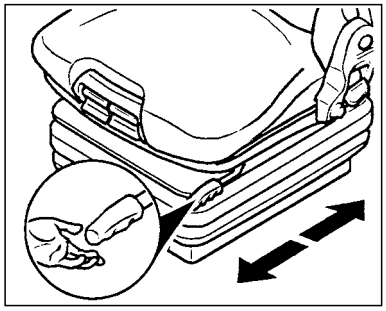
- With your back against the backrest, pull the lever and move the backrest to the required position.



If the backrest is not held in place during the adjustment, it will tilt forwards completely.

LONGITUDINAL ADJUSTMENT

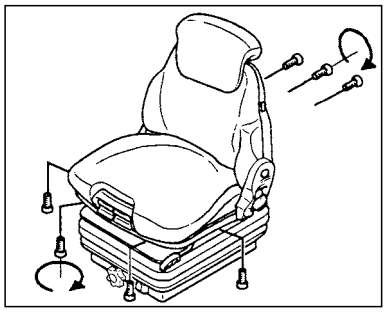
- Insert the locking lever in the required position. Once blocked the seat will not move .



CLEANING

Dirt can affect proper working of the seat. It must therefore be kept clean.

- To clean or change the cushions, just remove them from the seat frame.



Risks of accident increase when the back-rest is not locked perfectly!

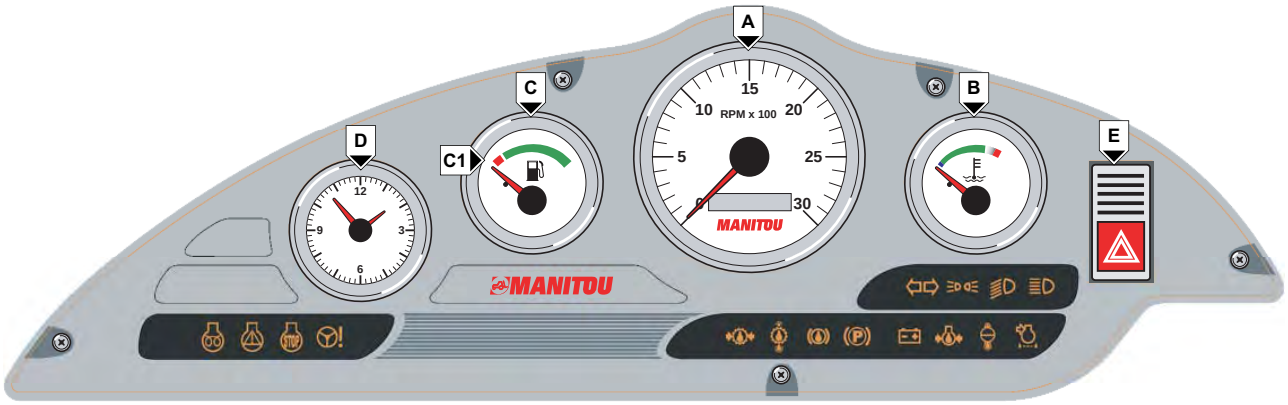
Avoid wetting the cushions while cleaning them. First check the fabric to make sure it is resistant to normal detergents for plastic fabrics and materials, by testing in a concealed area.

2 - SEAT BELTS

- Sit correctly in the seat.
- Check to make sure the seat belt is not twisted.
- Wear the belt around the waist and not the stomach.
- Fasten the seat belt and check to make sure it is secured properly.
- Adjust the belt to your body and avoid pressing against the hip.

Never use the fork lift truck with the seat belt damaged under any circumstances whatsoever (Fixing, blocking, seams, straps, etc.). Repair or replace the seat belt immediately.

3 - CONTROL INSTRUMENTS AND INDICATOR LIGHTS PANEL



CONTROL INSTRUMENTS

A - -SPEEDOMETER AND REVOLUTION COUNTER

-

B - I.C. ENGINE WATER TEMPERATURE

Temperature zones B1 – Blue zone (0° - 50°)
B2 – Green zone (50° - 100°)
B3 – Black/red zone (100° - 105°)
B4 – Red zone (105° - 120°)

NOTE: The red indicator lights up between the B3 and B54 zones.

C - FUEL LEVEL INDICATOR

The red zone C1 indicates that the fuel tank is in reserve and wont last long.

D - CLOCK DIAL

E - EMERGENCY LIGHTS SWITCH

Pressing this switch will activate all the direction indicators simultaneously.
To deactivate the indicators, press the switch again.

INDICATOR LIGHTS

On inserting the electric contact of the fork lift truck, all the red indicator lights and the buzzer of the panel must switch on, thereby indicating that they are working correctly. If one of these does not work, carry out the necessary repairs.

INDICATOR LIGHT NOT USED

INDICATOR LIGHT NOT USED

BRAKES FLUID LEVEL RED INDICATOR LIGHT

If the indicator and buzzer switch on while the forklift truck is in operation, switch the I.C. engine off immediately and check the brakes fluid level.
If the level is relatively low, contact your agent or dealer.

PARKING BRAKE RED INDICATOR LIGHT

The indicator lights up indicating that the parking brake has been activated.

ALTERNATOR ENERGIZATION RED INDICATOR LIGHT

If the indicator and buzzer switch on while the forklift truck is in operation, switch the I.C. engine off immediately and check the electrical system and the alternator belt.

I.C. ENGINE OIL PRESSURE RED INDICATOR LIGHT
If the indicator and buzzer switch on while the forklift truck is in operation, switch the I.C. engine off immediately and look for the cause of the problem (see engine crank casing oil level).

I.C. ENGINE OIL TEMPERATURE RED INDICATOR LIGHT
If the indicator and buzzer switch on while the forklift truck is in operation, switch the I.C. engine off immediately and check the cooling circuit for the cause of the problem.

AIR FILTER CLOGGED RED INDICATOR LIGHT
The indicator and buzzer switch on when the air filter cartridge is clogged. Switch off the forklift truck and carry out the necessary repairs (see the cleaning and replacement schedules in Chapter: 3 - MAINTENANCE: FILTER ELEMENTS AND BELTS).

DIRECTION INDICATORS GREEN INDICATOR LIGHT

POSITION LIGHTS GREEN INDICATOR LIGHT
This indicator lights up when the position lights are working.

DIPPED HEADLIGHTS GREEN INDICATOR LIGHT
This indicator lights up when the dipped headlights are switched on.

MAIN BEAMS BLUE INDICATOR LIGHT
This indicator lights up when the main beams are working.

I.C. ENGINE PRE-HEATING YELLOW INDICATOR LIGHT (OPTIONAL)
This indicator lights up during preheating of the I.C. engine in case of temperatures below 0° C.
Wait for the indicator to switch off completely before starting up the I.C. engine.

I.C. ENGINE PROBLEM ATTENTION YELLOW INDICATOR LIGHT
If the indicator lights up during the working of the forklift truck, consult the I.C. engine faults Monitoring Table and contact your agent or dealer.

I.C. ENGINE PROBLEM STOP RED INDICATOR LIGHT
If the indicator lights up during the working of the forklift truck, consult the I.C. engine faults Monitoring Table, switch off the I.C. engine, if necessary, and contact your agent or dealer.

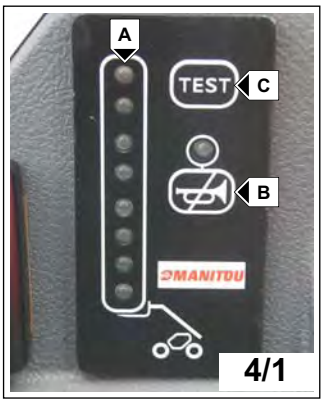
HYDROSTATIC POWER STEERING OIL PRESSURE RED INDICATOR LIGHT (OPTIONAL)
If the indicator lights up during the working of the forklift truck, switch off the I.C. engine immediately and contact your agent or dealer.

I.C. ENGINE FAULTS MONITORING TABLE

		STATO DELLA SPIA	Descrizione dello stato della spia	Stato del motore
ACCESA	ACCESA	Verifica della spia	Quando si ruota il commutatore a chiave di avviamento (8) entrambe le spie si accendono per 2 secondi.	Il motore è ancora spento.
SPENTA	SPENTA	Nessun guasto	Nessun codice diagnostico attivo.	Il motore funziona normalmente.
ACCESA	SPENTA	Codice diagnostico attivo	E' stato rilevato un codice diagnostico attivo.	Il motore funziona normalmente.
ACCESA	LAMPEGGIANTE	Codice diagnostico attivo	E' stato rilevato un codice diagnostico attivo grave ed è stata avviata una riduzione della potenza del motore.	Il motore funziona normalmente ma a potenza ridotta.
LAMPEGGIANTE	SPENTA	Allarme	E' stato superato uno o più dei valori di protezione del motore.	Il motore funziona normalmente.
LAMPEGGIANTE	LAMPEGGIANTE	Riduzione della potenza e allarme	E' stato superato uno o più dei valori di protezione del motore.	Il motore funziona normalmente ma a potenza ridotta.
ACCESA	ACCESA	Arresto del motore	E' stato superato uno o più dei valori di protezione del motore oppure è stato rilevato un codice diagnostico attivo grave.	Il motore è stato arrestato o l'arresto è imminente.

4 - LOAD CONTROL AND SAFETY DEVICE

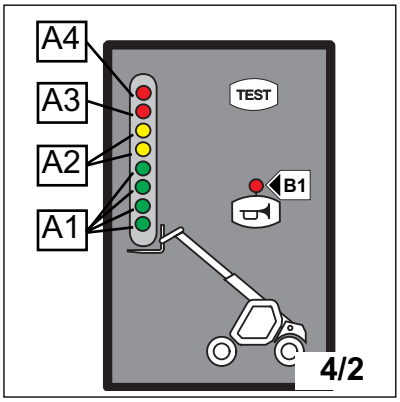
The load control and safety device makes it possible for the operator to know the condition of the lift truck in relation to the maximum permitted load.



4/1

WORKING
When the lift truck electric contact is activated, a test is carried out automatically.
- Correct working: All the LEDs and alarm sound function continuously for 2 seconds
- Defective working: All the LEDs and alarm sound function intermittently (Switch off the lift truck and contact your agent or dealer; never attempt to carry out repairs yourself)

A - LED (VISUAL ALARM) (Fig. 4/1 - Fig. 4/2)
A1- 4 green LEDs: The lift truck is operating in complete safety.
A2- 2 yellow LEDs: The lift truck is approaching the maximum permitted load limit.
A3- 1° red LED: The lift truck has reached the maximum permitted load limit.
The alarm sound is activated simultaneously slowly and intermittently.
A4- 2° red LED: The lift truck is overloaded. The alarm sound is activated slowly, intermittently and rapidly. Carry out the hydraulic movements in the following sequence: retract and lower the boom.



4/2

When the A4 - 2° red LED switches on the hydraulic commands are blocked automatically. Only boom retraction and inclination of the forks are permitted. Do not turn key "4a" to disconnect automatic blocking of the movements; this must only be used in operating conditions using the shovel.

B - ALARM SWITCH (Fig. 4/1 - Fig. 4/2)
Allows or inhibits use of the alarm sound. If it is not used, the red indicator light B1 indicates that the alarm sound is deactivated and only the visual alarm is working.

4/3

C - TEST INDICATOR (Fig. 4/1)
Press the switch at any time to check the correct working of the load status indicator device.
- Correct operation: All the LEDs and alarm sound function in continuous mode.
- Defective operation: All the LEDs and alarm sound function intermittently (Switch off the lift truck and contact your agent or dealer; never attempt to carry out repairs yourself)

D - STRAIN GAUGE (Fig. 4/3)
Disassembly or adjustment of the strain gauge is prohibited, this must only be done by specially trained personnel, consult your dealer.

4a - SAFETY SYSTEM INHIBIT KEY (Fig. 4/4)

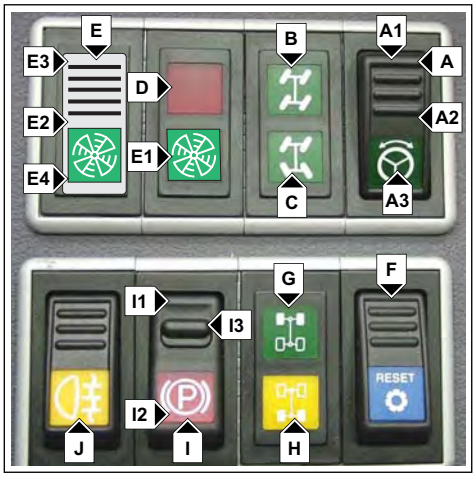
This key has two positions: "1" - "0".
In position "1" the safety system is enabled.
In position "0" the safety system is disenabled, and a red LED "5D" (pag. 16) lights up.

4/4

ATTENTION : The safety system can be inhibited only when operating with a shovel, by turning key "4a".
With the system inhibited, there is nothing to prevent tilting or overloading of the lift truck.

5 - SWITCHES PANEL

A - DIRECTION SELECTION SWITCH



Before selecting one of the three steering options, align the four wheels in relation to the forklift truck axis.

A1 - Front and rear steering wheels in opposite directions (Short or concentric steering).
A2 -Front steering wheels (Road travel).
A3 -Front and rear steering wheels in the same direction (crab steering).

*Wheel alignment procedure:
Press the steering mode selection switch on “A1”, turn the steering wheel until the rear wheels are aligned, press the steering mode selection switch on “A2”, and turn the steering wheel until the front wheels are aligned.
When the front and rear wheels are aligned, one of the three steering modes mentioned above can be selected.

The wheels coordination may be lost with use; carry out realignment of the wheels every 20 hours of service by following the procedure described above.

B - CONCENTRIC STEERING GREEN LIGHT

The green light indicates that concentric steering is selected.

C - LATERAL OR CRAB STEERING GREEN INDICATOR LIGHT

The green light indicates that lateral or crab steering is selected.

D - SAFETY SYSTEM DISENABLED RED INDICATOR LIGHT

The red indicator light indicates that key “4a” (page 15) is turned to position “0” and the safety system is disenabled.

In this condition, with the system excluded, there is nothing to prevent the truck from tilting over or overload.

E - FANS ROTATION INVERSION TIMED CONTROL SWITCH (OPTIONAL)

The 3-position switch can by activated to invert the rotation of the water cooler fan and intercooler radiator in the engine compartment, after a few seconds.
In this situation, the direction of fan rotation is alternated periodically (“E2” lights up to indicate that the system is activated).
- When the switch is pressed, “E2” (green light On), the fan rotation inversion function is activated.
- When the switch is pressed, “E3” (green light Off), the fan rotation inversion function is deactivated.
- When the switch is in position “E4” the fan rotation inversion function is forced. When the switch is released, the fan rotation inversion timed control is reset.

The switch can also be activated with the forklift truck running.

IMPORTANT
When the forklift truck is travelling on roads,
the fan rotation inversion system must be deactivated (switch pressed in position “E3”).

F - TRANSMISSION RESET PUSHBUTTON LIGHT ON

During normal use, the pushbutton light is On.
For more detailed information regarding its working, see point “K - SPEED SELECTOR (SLOW-FAST)”.

G - FRONT WHEELS ALIGNMENT GREEN INDICATOR LIGHT
Indicates alignment of the front wheels with respect to the vehicle axis.
When the wheels are aligned, the indicator lights up.
(See point “A” : *wheels alignment procedure).

H - REAR WHEELS ALIGNMENT YELLOW INDICATOR LIGHT
Indicates alignment of the rear wheels with respect to the vehicle axis.
When the wheels are aligned, the indicator lights up.
(See point “A” : *wheels alignment procedure).

I - PARKING BRAKE SWITCH
Two-position luminous switch with safety block.
The parking brake acts on the front axle.
- To release the brake, press the pushbutton in position “I1”.
- To lock the brake, press the pushbutton in position “I2”.

To release the brake from “I2” to “I1”, while pressing the switch, act on safety lock “I3”.

J - REAR FOG LIGHT SWITCH
Two-position luminous switch.

K - SPEED SELECTOR (SLOW-FAST)
The machine can run at two speeds:
- Slow (for work site)
- Fast (for road travel)

To change the speed, follow the instructions given below:
- stop the forklift truck movement completely
- keep the i.c. engine running at minimum speed
- position the reverse gear in idle (see point 15 on page. 22)
- push the brake pedal all the way and press the slow-fast pushbutton “M” until the respective lights “L” or “M” light up.

If the forward/reverse movement is not activated, follow the instructions given below:
- position the reverse switch as required (Forwards - Reverse)
- discharge pressure from the brake pedal
- Press the “F” “TRANSMISSION RESET” pushbutton to obtain the connection in the required direction.
- If the vehicle does not move, start accelerating the internal combustion engine slowly and gradually until the truck starts moving.

These indications must be followed for proper working of the transmission.

L - SLOW SPEED GREEN INDICATOR LIGHT
The green light indicates that slow speed is selected.

M - FAST SPEED GREEN INDICATOR LIGHT
The green light indicates that fast speed is selected.

N - OPERATING MODE
Activating the two-position switch will activate the operating system concerned to work slowly and accurately.
The switch can also be turned on with the lift truck in motion.

O - OPTIONAL DISCONNECT SWITCH (accessories hydraulic block)
The two-position switch is used for activating or deactivating the optional.
With the switch pressed in pos. “O1” (red indicator light On) the Optional/accessories hydraulic block function is activated.
With the switch pressed in pos. “O2” (red indicator light Off) the Optional/accessories hydraulic block function is deactivated.

P - STOPPING HYDRAULIC MOVEMENTS
While travelling on roads, it is advisable (compulsory in Italy and Germany) to stop all hydraulic movements.
The indicator lights up when the movements are being used.

Q - LEVELLING CONTROL PUSHBUTTON
The pushbutton has two positions; it controls the truck level correction movements to the right and left.
- pressing the button in position “Q1” will level the truck on the left
- pressing the button in position “Q2” will level the truck on the right

Verify the correct levelling using the sprit level placed in the cab (see point “17” on page 23 “Spirit level”)

N. B.: The levelling operation is not possible when the telescopic boom is inclined beyond approx. 30° from the ground.

R - 2°/3° HYDRAULIC EXTENSION SWITCH (OPTIONAL)
The switch has two or three positions depending on the machine setup.
It is used for switching the hydraulic control for making two or three hydraulic movements using the accessory.

S - ROTARY BEACON SWITCH
Two-position switch for turning the rotary beacon light on/off.

T - FRONT AND REAR WORK LIGHTS SWITCH (OPTIONAL)
Three-position switch for turning the work lights On/off.

U - SWITCH FOR WORK LIGHT AT THE TOP OF THE BOOM (OPTIONAL)

V - SWITCH FOR DEFROSTING REAR WINDOW (OPTIONAL)

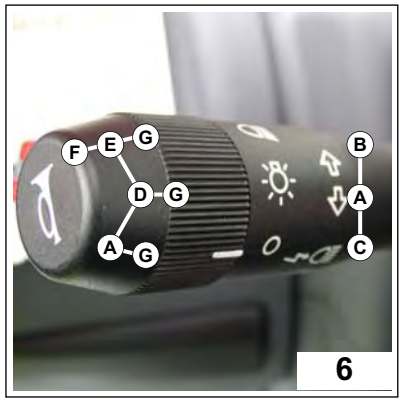
Z - SWITCH FOR ROOFTOP WINDOW WIPER (OPTIONAL)

6 - LIGHTS, HORN, AND TURN INDICATOR LIGHTS CONTROL LEVER

The lever commands visual and sound signals.

A - Lights are switched off, direction lights not working.
B - RH direction lights working.
C - LH direction lights working.
D - Position lights On.
E - Low beams and position lights On.
F - High beams and position lights On.
G - Flashing.

Press the tip of the lever to sound the horn.

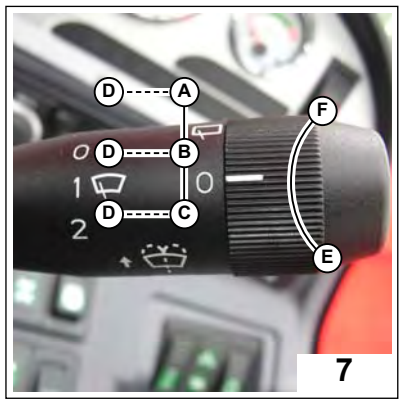


7 - FRONT AND REAR WINDSCREEN WIPER SWITCH

This switch controls the operation of the front and rear windscreen wipers.

A - Front windscreen wiper off.
B - Front windscreen wiper low speed setting.
C - Front windscreen wiper high speed setting.
D - Front windscreen wiper intermittent setting.
E - Rear windscreen wiper off.
F - Rear windscreen wiper on.

NOTE: These functions will only work when the ignition is switched on.

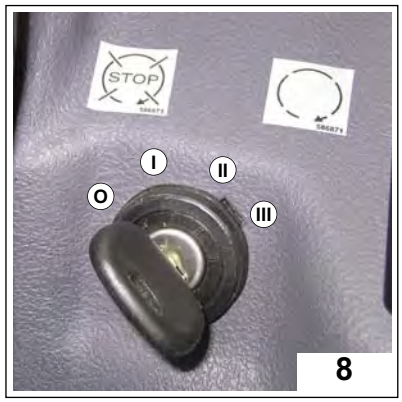


8 - KEY SWITCH

The key switch has 4 positions:

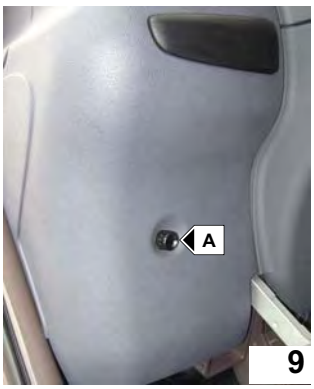
O - Electric contact and switching off the combustion engine.
I - Electric contact.
II - //
III - Start up and return to position “I” as soon as the key is released.

Before starting up the I.C. engine, make sure the forwards/backwards selector is in the idle position and that the emergency stop button is released.



9 - GUARD FOR ACCESS TO BRAKE FLUID AND WINDSCREEN WASHER LIQUID TANKS

Slacken screw “A” and remove the guard to access the brake fluid and windscreen washer liquid tanks.



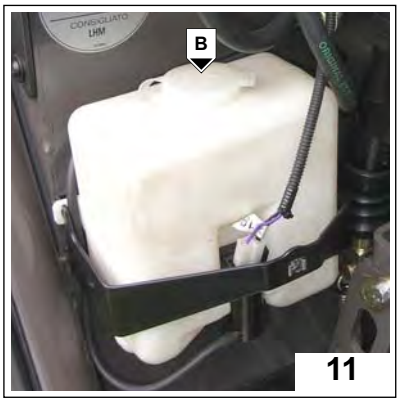
9

10 - BRAKES FLUID TANK

10

11 - WINDSCREEN WASHER LIQUID TANK

To the operator’s LH. Remove cap “B”; make sure the container is always full. Liquid to be used: water + detergent (use anti-freeze in winter).



11

12 - GUARD FOR ACCESS TO FUSES AND RELAYS

Release and pull block “C” to remove the guard for access to the fuses and relays.

12

13 - ACCELERATOR PEDAL, SERVICE BRAKE AND INCHING PEDALS

Pedal “A” is used to change the lift truck speed by acting on the combustion engine rpm.
Pedal “B” acts on the front wheels and makes it possible to slow down and block the lift truck. The brake pedal in the first 20 mm of travel works as the inching pedal allowing precise, slow movements, and during the rest of the travel produces the braking effect.

14 - REVERSING CONTROL

The lift truck gear reversal must be done at low speeds without accelerating.

FORWARD : Push the knob forward (position C).
REVERSE : Pull the knob backwards (position D).
NEUTRAL : The knob must be in the intermediate position to start the lift truck (position E).

NOTE: The reversing lights indicate that the fork lift truck is moving in reverse. A reversing buzzer is also present.

If the forward/reverse movement is not activated, see point “5F” on page 16.

These indications must be followed for proper working of the transmission.

SAFETY FOR MOVING THE LIFT TRUCK
Authorisation to move the lift truck is controlled by an electronic unit. The operator must observe the following sequence to move the truck forwards or backwards:

1 - sit down correctly in the driver’s seat,
2 - release the parking brake,
3 - engage forward or reverse movement.

To stop the lift truck, he must observe the following sequence:

1 - set the reversing gear in neutral,
2 - engage the parking brake,
3 - get out of the lift truck.

NOTE: If the operator leaves the driver’s seat for a short time with the forward or reverse movement activated, the vehicle will continue to move.
If the operator leaves the driving seat for a long period with the forward or reverse movement activated, the vehicle will set itself in idle mode, the operator will have to return to the driver’s seat, restore the inverter to idle and activate the forward or reverse movement to continue with the movement.

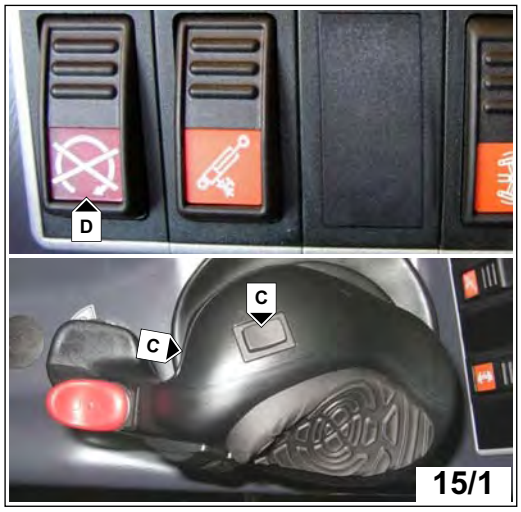
15 - ELECTRO-HYDRAULIC CONTROLS

The truck has a multi-purpose, single-lever manipulator with proportional electro-hydraulic control, to the right of the operator, and is provided with two rollers “A” and “B” (Fig.15).
To enable the movements, at least one of the two enable pushbuttons “C” (Fig.15/1) must be kept pressed.

- to raise the load, pull the lever backwards (Fig.15/2)
- to lower the load, push the lever forwards (Fig.15/2)
- to incline the forks downwards, push the lever to the right (Fig.15/2)
- to incline the forks upwards, push the lever to the left (Fig.15/2)
- to extend the boom, rotate roller “A ” forwards (Fig.15/2)
- to retract the boom, rotate roller “A ” backwards (Fig.16/2)
- to use the optional command, rotate roller “B” forwards or backwards (Fig.15/2) (pushbutton “D” (Fig.15/1) pressed and red indicator light On, see point “5O” page 18).

Do not attempt to modify the hydraulic pressure of the system.
In case of problems, contact your agent or dealer.

MANIPULATIONS WILL INVALIDATE THE WARRANTEE.

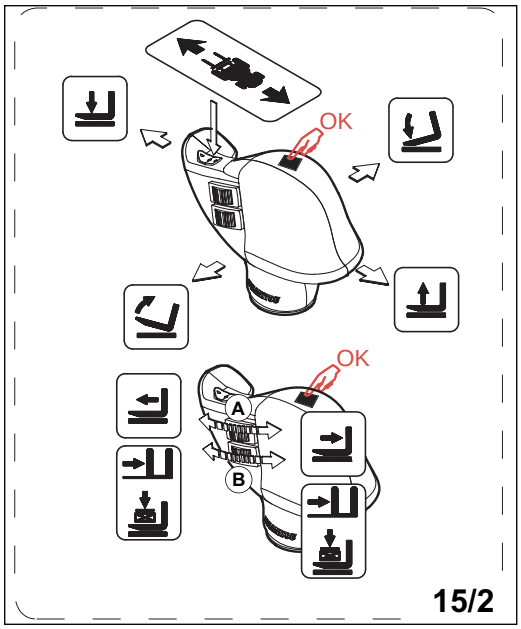


15/A - DECOMPRESSION OF OPTIONAL CIRCUIT

This operation must be carried out each time a lift truck supplementary accessory is to be connected or disconnected.
1) Switch the combustion engine off and turn ignition key “8” to position “I”.
2) Rotate roller “B” forwards and backwards (pushbutton “D” (Fig.15/1) pressed and red indicator light On, see point “5O” page 18).

When the operation is complete, the optional is depressurized; it will therefore be easier to connect/disconnect the quick-release couplings on the top of the boom.

N. B. The operations must be carried out immediately after the combustion engine is switched off, and not for more than 3 seconds for each command.



16 - EMERGENCY STOP RED PUSHBUTTON

This pushbutton stops the I.C. engine.

NOTE: PRESS THE BUTTON ONLY IN CASE OF EXTREME NEED TO STOP THE I.C. ENGINE.

To stop the I.C. engine, press the red pushbutton “A”.
To re-enable the switching on of the I.C. engine, turn the red pushbutton “A” clockwise.

17 - LOAD CHART FILE

This file includes the description of the hydraulic controls and the load charts of the attachments used on the lift truck.

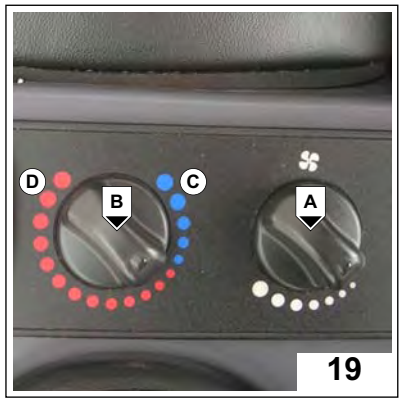
18 - SPIRIT LEVEL

It is situated at the top inside the cab, in front of the operator, and is used for levelling operations to check the inclination of the lift truck with respect to the ground (see point “5R” page 18 “Levelling control pushbutton”).

19 - HEATING CONTROLS

A) FAN KNOB
This 3-speed knob is used to supply cold/hot air to the diffusers.

B) TEMPERATURE REGULATOR KNOB
This knob is used to adjust the temperature inside the cab.
“C” - The valve is closed, the fan supplies cold air.
“D” - The valve is completely open, the fan supplies hot air.
The intermediate positions are used to adjust the temperature.



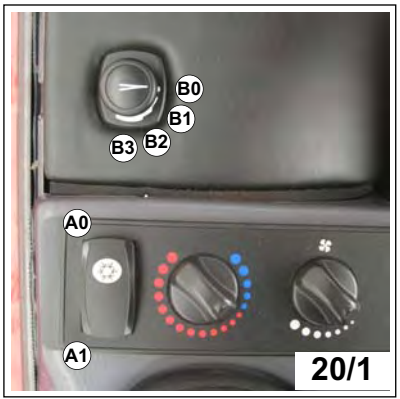
20 ▫ AIR CONDITIONING (OPTIONAL)

A) COMPRESSOR SWITCH

This switch has 2 positions:
"A0" - Off (indicator switched off)
"A1" - On (compressor, and indicator light switched on)

N.B. The lights indicates that the compressor is switched on.

ATTENTION:
The compressor can only be switched on with the fan knob turned to the "B1", "B2", or "B3" position.
If the fan knob is in the "B0" position, the compressor will not switch on.



20/1

B) Knob

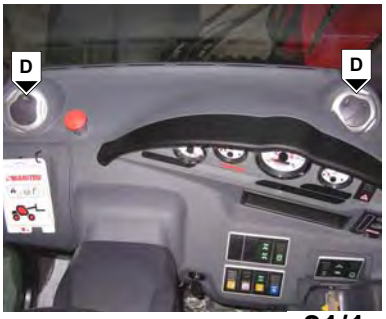
Adjusts the air flow in the supplementary air vents behind the driver's seat.
"B0" - Off
"B1" - 1st speed
"B2" - 2nd speed
"B3" - 3rd sped

Adjust the direction of the vents present behind the driver's seat "C" Fig. 20/2.

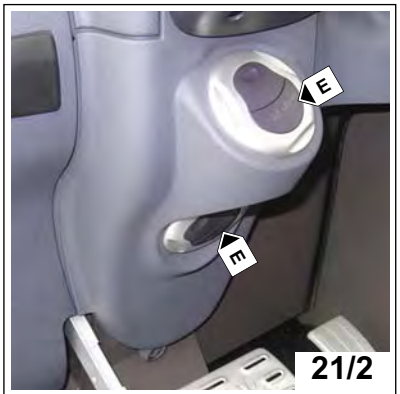
20/2

21 ▫ AIR VENTS

These vents direct the ventilation inside the cab; they are present in the upper part of the cab "D" (Fig. 21/1) and at the operator's feet "E" (Fig. 21/2).



21/1



21/2

22 - CEILING LIGHT

The switch is built into the ceiling light.
It has two positions: continuous lighting and Off.

22

23 - SUNSHADE (OPTIONAL)

Front sunshade
Adjust the height of the sunshade pulling handle “A” downwards (Fig. 23/1).
Press lever “B” (Fig. 23/1) to the RH to rewind the shade.

Rooftop sunshade
Pull the sunshade backwards, locking it in the hooks provided “C” (Fig. 23/2).

23/1

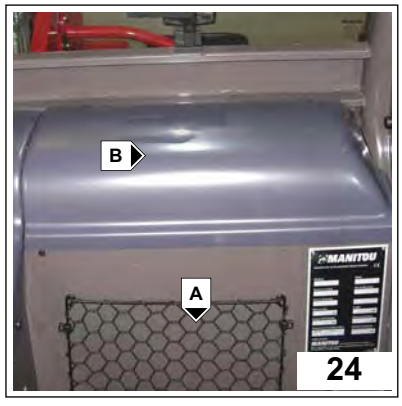
23/2

24 - TOOLS AND DOCUMENTS COMPARTMENT

In the back of the driver’s seat, there is a documents compartment “A”, make sure the instruction manual is always present in it.

NOTE: A water-tight document holder is also available as OPTIONAL.

Cover “B” can be lifted to access the tool compartment.



24

25 - CIGARETTE LIGHTER

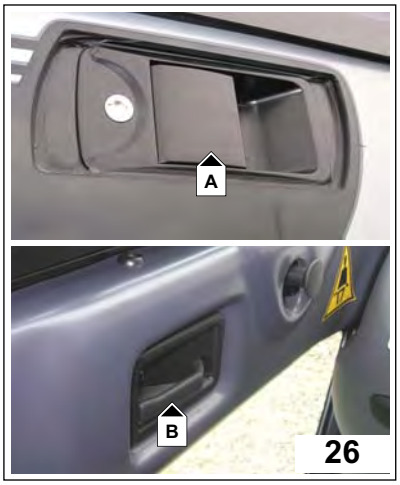
The cigarette lighter is present to the RH of the driver.

25

26 - DOOR LOCK

Outer lock “A” (Fig. 26) : To open the door, grip the handle and pull outwards.
The lift truck is provided with two keys for locking the cab.

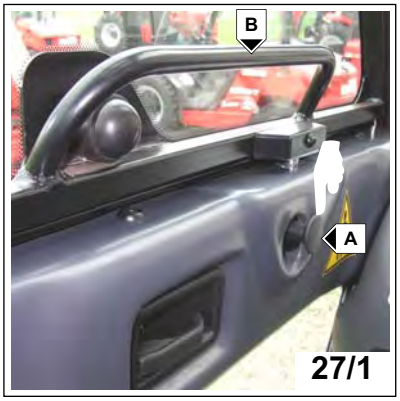
Inner lock “B” (Fig. 26) : To open the door, grip the handle and pull it inwards.



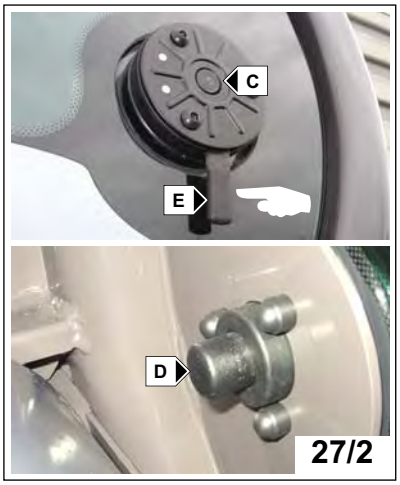
26

27 - TOP HALF-DOOR LOCK

Closed position : To open, press lock “A” (Fig. 27/1) downwards.
To close, pull handle “B” (Fig. 27/1) inwards.
Open position: Push the door towards the cab to lock key “C” (Fig. 27/2).
To release, press knob “D” (Fig. 27/3) or use lever “E” (Fig. 27/2).



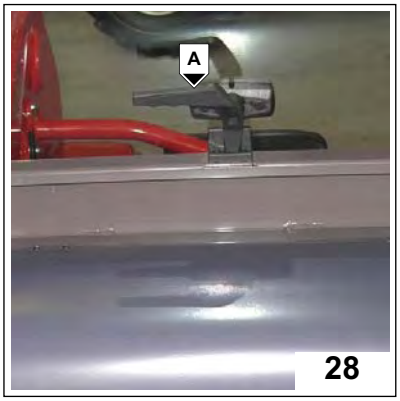
27/1



27/2

28 - REAR WINDOW OPENING LEVER

To open the rear window, pull lever “A” clockwise to the right and push the glass.



29 - HITCH

The hitch is present on the rear part of the lift truck and is used for a trailer. The capacity for each lift truck is limited by the total permitted carriage weight, the pulling force and the maximum vertical force on the drawbolt. These data are indicated on the manufacturer’s plate affixed on every lift truck.

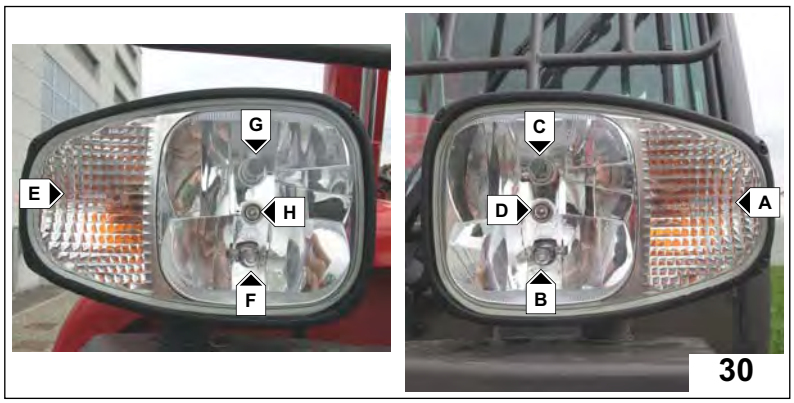
N.B. : Optional solutions are available for towing; for more information, please contact your agent or dealer.

- Travelling on roads with a trailer is only permitted for homologated agricultural tractors.
- Check the braking system and trailer signalling system and connect these to the lift truck.
- Reduce the lift truck speed.
- Follow the road rules of the country of use.

Ensure that the split pin is fitted correctly on the hitch.

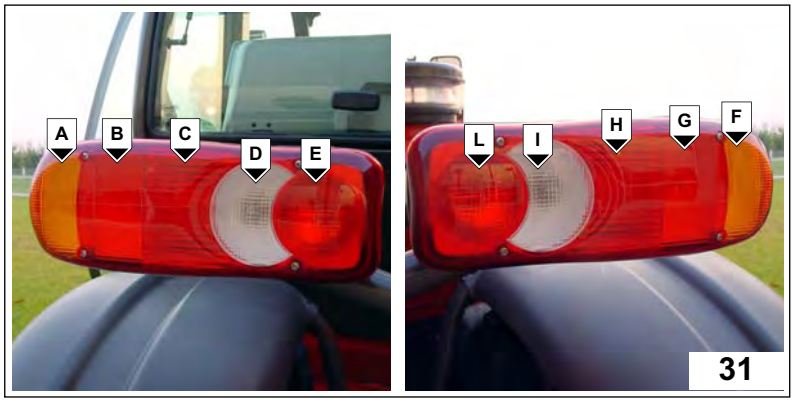
30 - FRONT LIGHTS

A - Left front indicator.
B - Left front dipped headlight.
C - Left front main beam.
D - Left front sidelight.
E - Right front indicator.
F - Right front dipped headlight.
G - Right front main beam.
H - Right front sidelight.



31 - REAR LIGHTS

A - Left rear indicator.
B - Left rear stoplight.
C - Left tail light.
D - Left rear reverse light.
E - Left rear fog light.
F - Right rear indicator.
G - Right rear stoplight.
H - Right tail light.
I - Right rear reverse light.
L - Right rear fog light.

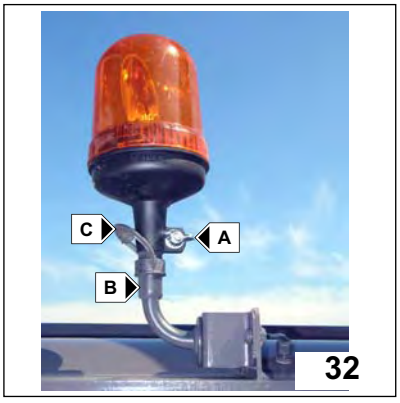


32 - ROTARY TOWER LIGHT

The rotary tower light may be inclinded, if necessary, to reduce the lift truck dimensions; it can also be dismantled to avoid theft.

- Unscrew nut “A” and remove the rotary tower light.

- Protect support “B” with cover “C”.



33 - STEERING WHEEL ADJUSTMENT LEVER

This lever is used for adjusting the inclination and height of the steering wheel.

- Pull lever “A” (Fig. 33/1) to slacken and adjust the steering wheel (Fig. 33/2).

- Push lever “A” (Fig. 33/1) to lock the steering wheel in the selected position.

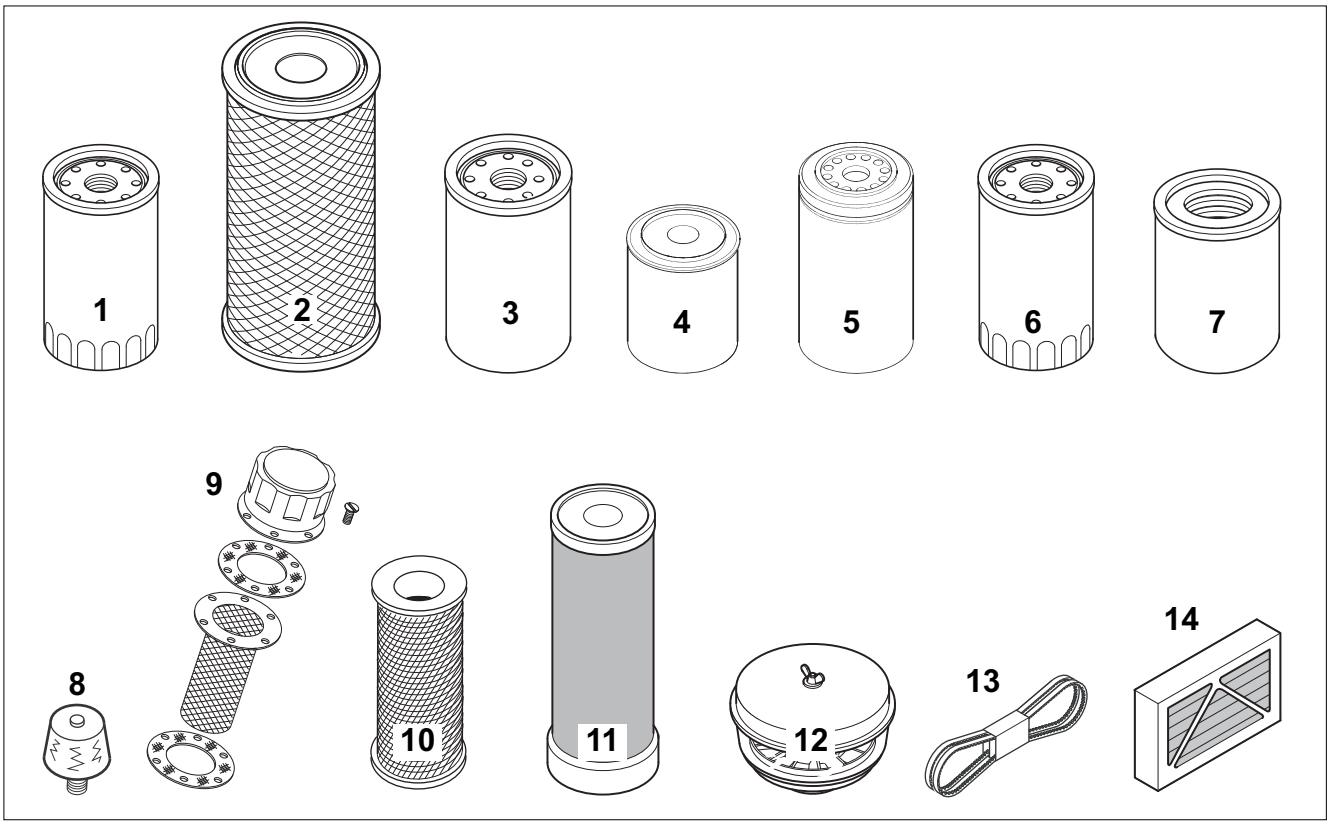
3 - MAINTENANCE

INTRODUCTION TO SAFETY

FILTER ELEMENTS AND BELTS

DESCRIPTION	REFERENCE	50 H / 100 H (WITHIN 3 MON.)	REPLACEMENT SCH.
1 Engine oil filter	476 954	Replace	Every 500 H
2 Air filter cartridge ▲	775 479	Clean	Every 500 H
3 Transmission oil filter	485 695	Replace	Every 500 H
4 Fuel pre-filter cartridge with water separator	745 032	Check	Every 500 H
5 Fuel filter cartridge	747 351	Replace	Every 500 H
6 Engine base vent cartridge	743 204	/	Every 500 H
7 Hydraulic oil filter cartridge (exhaust)	673 203	Replace	Every 500 H
8 Hydraulic oil tank vent	448 269	Clean	Every 500 H
9 Hydraulic oil tank venting plug	659 917	/	Every 1000 H
10 Hydraulic oil filter cartridge (intake)	513 752	Check	Every 1000 H
11 Safety air filter cartridge ▲	775 480	Check	Every 1000 H
12 Cyclone pre-filter	773 433	/	/
13 Engine belt	503 965	Check	Every 1000 H
14 Cab ventilation filter cartridge	225 052	Clean	Every 500 H

▲ : In extremely dusty environments, reduce the interval and make replacements sooner.



COMPULSORY REPORT (50 - 100 HOURS OF SERVICE WITHIN 3 MONTHS)

List of operations to be performed

- COMBUSTION ENGINE
- Change oil
- Replace oil filter
- Replace fuel filters
- Clean air filter
- Check seals: injection-supply
- Check cooling circuit
- Check belt tension
- Adjust valves

- HYDROSTATIC TRANSMISSION
- Replace intake filter
- Clean return filter (depending on assembly)
- Check oil level
- Check transmission control adjustment

- AXLES / GEAR BOX
- Replace differential oil/brakes casing
- Change reduction gear oil
- Grease pins, articulations and commands
- Grease oscillation
- Change gear box oil

- HYDRAULIC CIRCUIT
- Replace return filter
- Check oil level
- Check seals

- BRAKING CIRCUIT
- Check working of service and parking brakes
- Check brake fluid level (depending on assembly)

- TELESCOPIC BOOM
- Grease the outriggers
- Grease all the trunnions
- Check locking of sliding pads

- MANISCOPIC SAFETYSYSTEM
- Check the working and adjustment, if necessary

- ACCESSORIES / OPTIONS
- Check the working

- CAB
- Check the dashboard and all the instruments.
  Check controls, heating and air conditioning (if present)

- ELECTRIC CIRCUIT
- Check battery level
- Check working of lights

- WHEELS
- Check tightening of wheels
- Check tyre pressure

- GENERAL MACHINE LUBRICATION

- WORKING OF THE MACHINE
- Hydraulic function with rated load
- Road test: steering and braking

LUBRICANTS

PARTS TO BE LUBRICATED	VOLUME	RECOMMENDED PRODUCT
Combustion engine	7 L	Shell: Rotella 15w40 Citgo: C-600 15w40
Rear wheels reduction gear Front wheels reduction gear	0,8 L 0,8 L	Shell: Spirax DH80w90 Citgo: Prem Gear MP 80w90
Front axle differential Gear box Rear axle differential	10 - 11 L 2,5 L 10 - 11 L	Shell: Donax TD Citgo: Trans Trac Hyd FL (THF)
Hydraulic oil tank	140 L	Shell: Tellus T46 Citgo: Transgard THF Lo-Temp
Braking circuit	0,8 L	Shell: Donax TG Dexron III Citgo: Transgard ATF Dexron III
General lubrication		Shell: Rentinax Am Citgo: Lithoplex CM-2
Greasing telescopic boom		Shell: Rentinax Am Citgo: Lithoplex CM-2
Cooling circuit	25 L	Tulco 50/50 Anti-freeze
Fuel tank	120 L	Diesel *

*FEATURES OF FUEL

Use good quality fuel to obtain the best performance out of the I.C. engine.
FEATURES OF THE RECOMMENDED FUEL :

- *DERV in accordance with EN590*
- *BS2869 Class A2*
- *ASTM D975 - 91 Class 2D*
- *JIS K2204 (1992) Degrees 1, 2, 3 and Special Degree 3.*

The hydrostatic transmisson filter, hydraulic filter, oil and engine filter must be replaced after the first 50 hours of service to guarantee safety

MAINTENANCE SCHEDULE

A - DAILY OR EVERY 10 HOURS OF SERVICE

A1 - Check engine oil level.
A2 - Check cooling circuit filling
A3 - Check fuel level.
A4 - Check and drain the fuel filter with water separator.
A5 - Clean the cyclonic filter.
A6 - Check tyre pressure and locking of wheel nuts.
A7 - Check telescopic boom pads.

B - EVERY 50 HOURS OF SERVICE

B1 - Clean air filter cartridge ▲.
B2 - Check hydraulic oil level.
B3 - Clean radiator grilles.
B4 - Check brake circuit oil level.
B5 - Clean and grease telescopic boom pads ◆.
B6 - Clean and grease cab door pins.■
B7 - Clean and grease front and rear wheels pivot pins.■
B8 - Clean and grease telescopic boom articulation pin.■
B9 - Clean and grease quick release articulation pin.■
B10 - Clean and grease lift jack base and rod pins.■
B11 - Clean and grease compensation jack base and rod pins.■
B12 - Clean and grease slewing jack base and rod pins.■
B13 - Clean and grease levelling jack base and rod pins.■
B14 - Clean and grease two front axle oscillation bushings.■
B15 - Clean and grease two rear axle oscillation bushings.■
B16 - Clean and grease cross journals and cardan shaft.■

C - EVERY 250 HOURS OF SERVICE

C1 - Check alternator belt tension/driving shaft.
C2 - Check front and rear axle differential oil level.
C3 - Check front and rear wheels reduction gear oil level.
C4 - Check transmission box oil.
C5 - Check battery.

D - EVERY 500 HOURS OF SERVICE OR YEARLY ●

D1 - Drain and change engine oil.
D2 - Replace engine oil filter.
D3 - Replace air filter cartridge ▲.
D4 - Change the motor base vent cartridge.
D5 - Replace fule filter cartridge.
D6 - Change cartridge of the fuel filter with water condenser.
D7 - Replace transmission oil filter.
D8 - Replace hydraulic oil filters (exhaust).
D9 - Replace the hydraulic and transmission oil vent filter.
D10- Replace cab ventilation filter ▲.

E - EVERY 1000 HOURS OF SERVICE OR YEARLY ●

E1 - Replace air filter safety cartidge ▲.
E2 - Drain and change hydraulic oil.
E3 - Replace hydraulic oil suction filter cartridge.
E4 - Drain and change front and rear axle differential oil.
E5 - Drain and change front and rear wheels reduction gear oil.
E6 - Change transmission box oil.
E7 - Drain and clean fuel tank.
E8 - Replace alternator belt/engine shaft.
E9 - Replace transmission hydraulic oil filler and vent plug.
E10 - Check telescopic boom pads for wear *.
E11 - Check engine valves clearance ▼ *.

F - EVERY 2000 HOURS OF OPERATION OR EVERY 2 YEARS ●

F1 - Check alternator and starter motor *.
F2 - Check turbo compressor *.
F3 - Check radiator *.
F4 - Check water pump and thermostat *.
F5 - Change cooling circuit liquid.

G - OCCASIONAL MAINTENANCE ●

G1 - Changing a wheel.
G2 - Towing the fork lift truck.
G3 - Slinging the fork lift truck.
G4 - Transporting the fork lift truck on a platform.
G5 - Adjusting head lights.
G6 - Air conditioning *.

** For these operations, consult your agent or dealer.*

● *To be performed once a year if the lift truck has not completed the required number of operating hours.*

▲ : In extremely dusty environments, reduce the interval and make replacements sooner.

◆ : Every 50 hours up to the first 250 hours and periodically, every 1000 hours of service.

■ : In case of use in extremely dusty or oxidising environments, reduce this frequency to 10 hours of operation or daily.

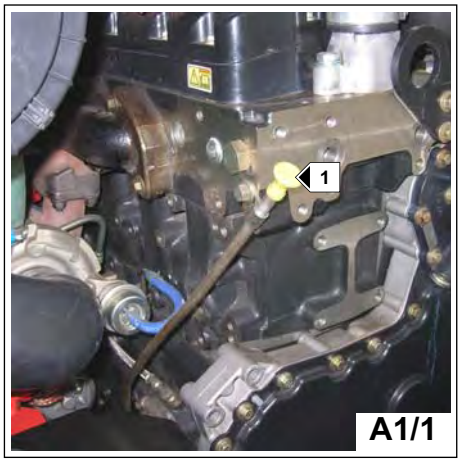
▼ : After the first 500 hours of operation and periodically every 1000 hours of operation.

A - DAILY OR EVERY 10 HOURS OF SERVICE

A 1 - CHECK ENGINE OIL LEVEL

Before checking the oil level, make sure the combustion engine is switched off and the lift truck is parked on a level horizontal surface.
For precise indications, wait a few minutes after the engine stops to allow the oil to flow into the crankcase.

Remove dipstick “1” (Fig. A1/1) clean it and check the oil level.
Top up through the filler hole “2” (Fig. A1/2) , if necessary.



A1/1

A1/2

A 2 - CHECK COOLING CIRCUIT FILLING

Refer to point F5 for the cooling circuit filling procedure. If necessary, add cooling fluid during maintenance, and let the engine cool down before proceeding. Remove the filler plug carefully as there is serious risk of coolant splashing out if the system is still pressurized and the liquid itself is still hot.

The cooling liquid added in the maintenance phase must be the same as that originally used for filling the circuit.

A2

A 3 - CHECK FUEL LEVEL

Position the lift truck on a horizontal surface, with the combustion engine switched off.

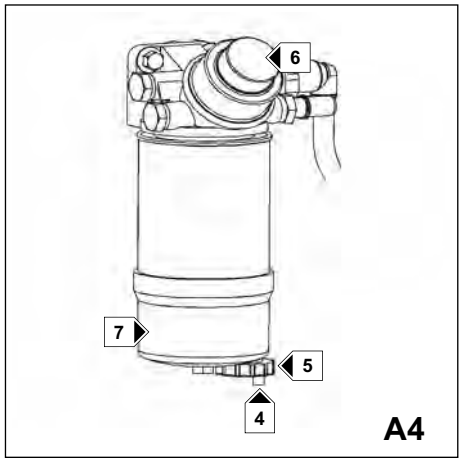
To reduce the condensate due to atmospheric conditions to a minimum, keep the fuel tank filled as far as possible.

- Remove plug “3” (Fig. A3).
- Fill the tank with fuel oil through the filler plug taking care to avoid impurities entering the tank.
- Refit plug “3” (Fig. A3).

Do not smoke or approach the machine during fuelling operations or with the tank open. Never carry out fuelling operations with the combustion engine running.

A 4 - CHECK AND DRAIN THE FUEL FILTER WITH WATER TRAP

Make sure the engine is stationary before carrying out maintenance or repairs on it.
Place a suitable container under the condensate trap to collect the fuel that flows out.
Wipe the fuel that leaks out.
Install a suitable tube on outlet “4” (Fig. A4).
Open drainage outlet “5” (Fig. A4).
Let the liquid flow out into the container.
Close drainage outlet “5” (Fig. A4) tightening it only manually.
Remove the tube and dispose off the drained liquid in accordance with the regulations applicable in the country of use.



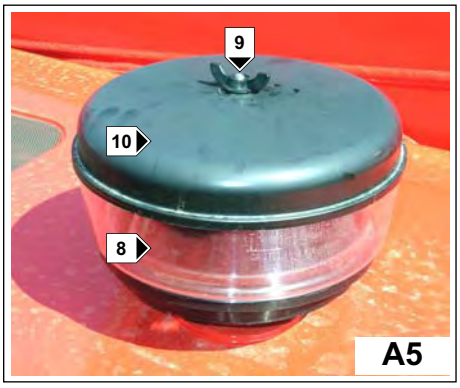
Do not smoke near or approach the machine with the flame while filling the tank or when the tank is open.

Never refuel with the engine running.
If the tank has been empty for a while or the vehicle has run dry without fuel, run the priming pump “6” (Fig. A4) until the glass cup fills up “7” (Fig. A4).
Switch the engine on and check for leaks.

A 5 - CLEAN THE CYCLONIC PREFILTER

The cleaning frequency given here is purely indicative, the prefilter must, however, be cleaned as soon as the impurities reach the MAX level visible on cup “8” (Fig. A5).

- Slacken nut “9” (Fig. A5), remove cover “10” (Fig. A5) and drain cup “8” (Fig. A5).
- Wipe the prefilter with a clean dry cloth and refit it.



A5

While cleaning, take special care
to prevent impurities from entering the dry air filter.

A 6 - CHECK TYRE PRESSURE AND LOCKING OF WHEEL NUTS

Check the tyre pressure and adjust, if necessary (see the "Specifications" Chapter).
Check the tyres for cuts, protruberances, wear, etc..
Check the locking of the wheel bolts (see TABLE Fig. A6).

A6

WHEEL NUTS TIGHTENING TORQUE	
FRONT WHEELS	465 ft/lb
REAR WHEELS	465 ft/lb

Follow these warnings to avoid rupture as it can result in accidents.

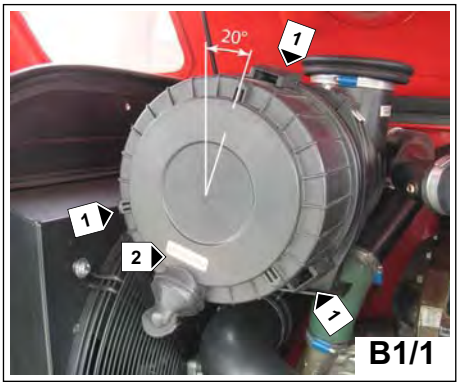
A 7 - CHECK THE TELESCOPIC BOOM PADS

Remove the telescopic boom completely and make sure the telescopic boom pads are greased correctly (if greasing is required, see point B5).

B - EVERY 50 HOURS OF SERVICE

B 1 - CLEAN AIR FILTER CARTRIDGE

Release blocks “1” (Fig. B1/1) and remove cover “2” (Fig. B1/1).
Remove cartridge “3” carefully (Fig. B1/2), to reduce dust dispersal to the minimum.
Do not remove the safety cartridge.
Clean the filter cartridge using a jet of compressed air, always directing the jet outwards from inside.
Wipe the inside of the filter with a damp, clean cloth that does not leave residue, after covering the combustion engine inlet pipe.
Check the condition of the cartridge.
Cartridges that are no longer efficient must be replaced immediately.
Insert cartridge “3” (Fig. B1/2) in the filter rod, pressing the cartridge around the edges, not in the middle.
Refit cover “2” (Fig. B1/1) orienting the valve correctly (for correct working of the valve, do not exceed the inclination of approx. 20°) and tighten blocks “1” (Fig. B1/1).



B1/1

B1/2

Never wash an air filter cartidge.

B 2 - CHECK THE HYDRAULIC OIL LEVEL

Position the lift truck on a level surface with the combustion engine switched off and the telescopic boom retracted and lowered all the way down.
Check indicator “4” (Fig. B2/1).
The oil level is correct when it is slightly below the maximum level.
Add oil, if necessary (see the “LUBRICANTS” Table) through filler hole “5” (Fig. B2/2).
Always keep the oil level maximum for optimum performance.

B2/1

B2/2

B 3 - CLEAN THE RADIATOR GRILLES

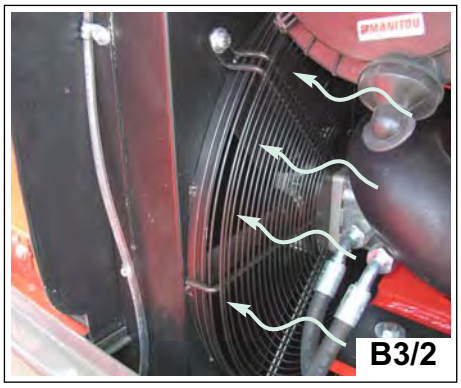
Check the radiator (intercooler Fig. B3/1; water Fig. B3/2; oil Fig. B3/3) for: damaged fins, corrosion, dirt, grease, insects, leaves, oil or other debris.

The compressed air can cause accidents.
While using compressed air, wear a protective device for the face and protective clothing.
The maximum pressure of the compressed air at the nozzle outlet must be 2 bar (30 PSI).

B3/1

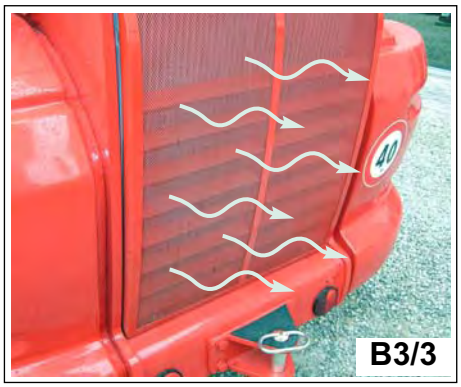
Direct the compressed air jets in the direction of the arrows.
Keep the air nozzle at a distance of about 6mm from the radiator fins.

Also use pressurized water to soften mud or solid debris. The maximum water pressure must be less than 2.7 bar (40 PSI).


B3/2

To remove oil and grease, use a degreaser and steam. Clean both sides of the radiator mass. Wash the radiant mass with detergent and boiling water. Rinse the radiant mass thoroughly with clean water.

After cleaning the radiator/s, start the I.C. engine, keeping it running at minimum for about five minutes. Bring the I.C. engine to maximum operating speed without load (this operation helps to remove debris and to dry the radiant mass). Gradually reduce the I.C. engine speed to the minimum and stop it. Use a light to check behind the radiant mass to see if it is clean. If necessary, clean again.


B3/3

Check to see if fins are damaged. Bent fins can be straightened using a "comb".
Check to make sure the following elements are in good condition. welded parts, mounting brackets, piping, connections, clamps and gaskets. Carry out repairs, if necessary.

B 4 - CHECK BRAKE CIRCUIT OIL LEVEL

Position the truck on a flat level surface with the engine switched off.

- Remove the guard for access to the brake oil tank.
- The oil level in the tank must be at the maximum level.
- Add oil, if necessary, through the filler hole "6" (Fig. B4) (see the "LUBRICANTS" Table).

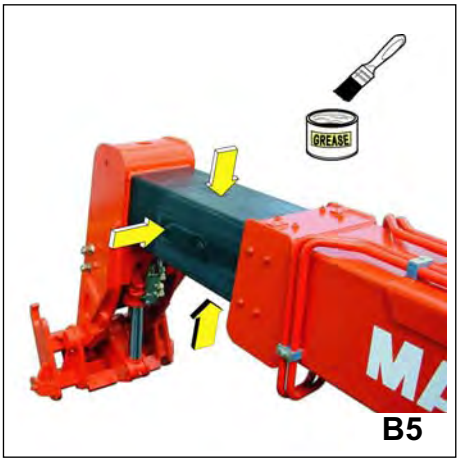
In case of abnormal drop in level, consult your agent or dealer.

B4

B 5 - CLEAN AND GREASE TELESCOPIC BOOM PADS

This operation must be carried out every 50 hours up to the first 250 hours of service and then every 1000 hours of service, subsequently.

- Extend the boom completely.
- Using a brush apply a layer of grease (see: 3 - MAINTENANCE: LUBRICANTS AND FUEL) on all four sides of the telescopic boom (fig. B3).
- Extend and retract the boom a number of times to distribute the grease uniformly.
- Remove excess grease.



B5

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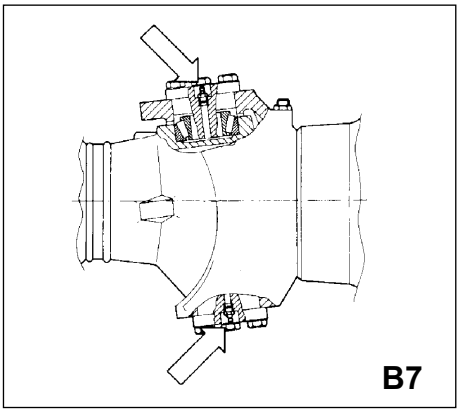
*Must be done **every week** if the lift truck has not completed 50 hours of weekly service.*

<u>If used intensively</u> in extremely dusty and oxidising environments, reduce this frequency to <u>10 HOURS</u> of service or daily.

B 6 - CLEAN AND GREASE CAB DOOR PINS

B6

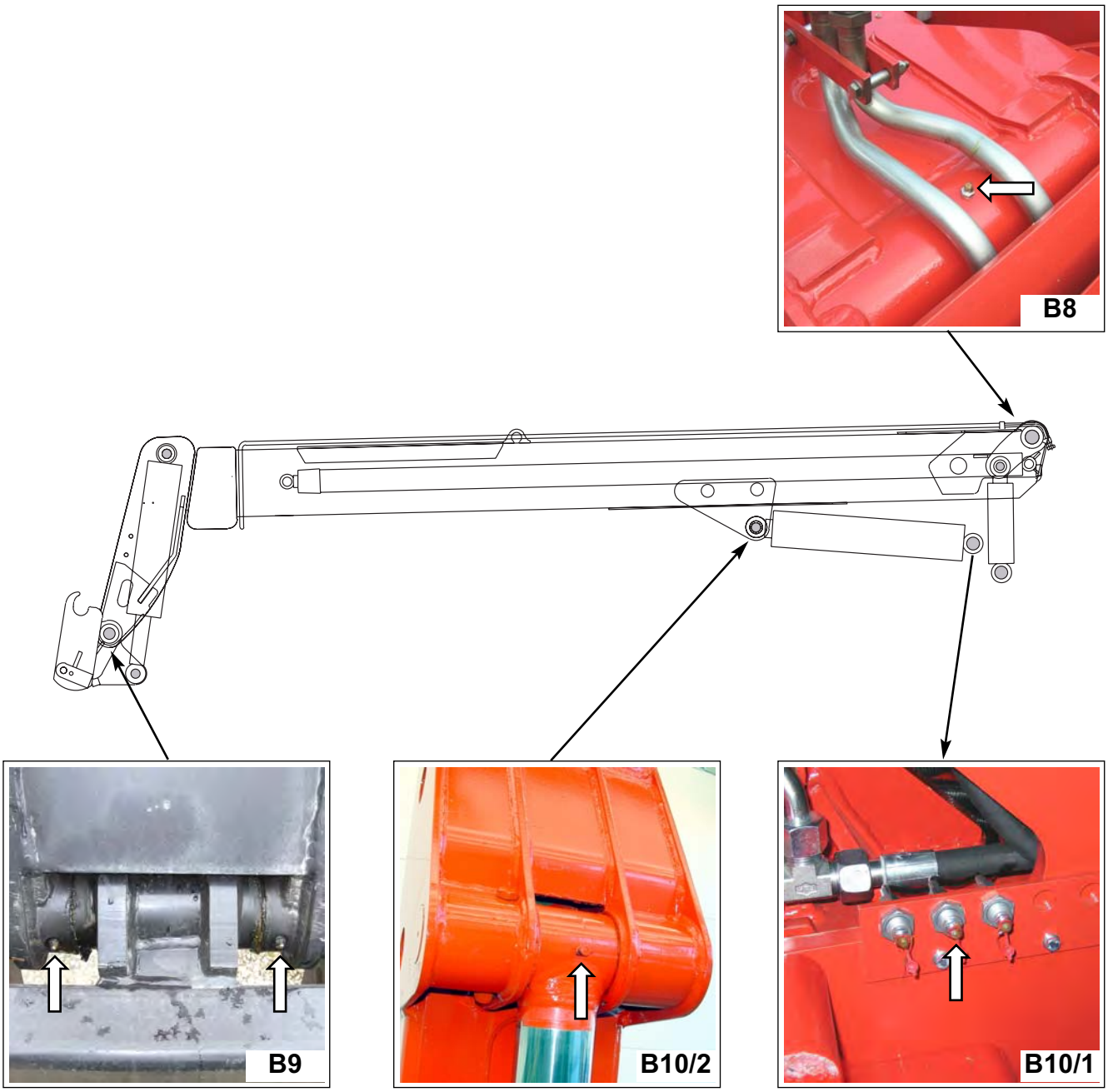
B 7 - CLEAN AND GREASE FRONT AND REAR WHEEL PIVOT PINS


B7

B 8 - CLEAN AND GREASE THE TELESCOPIC BOOM ARTICULATION PIN

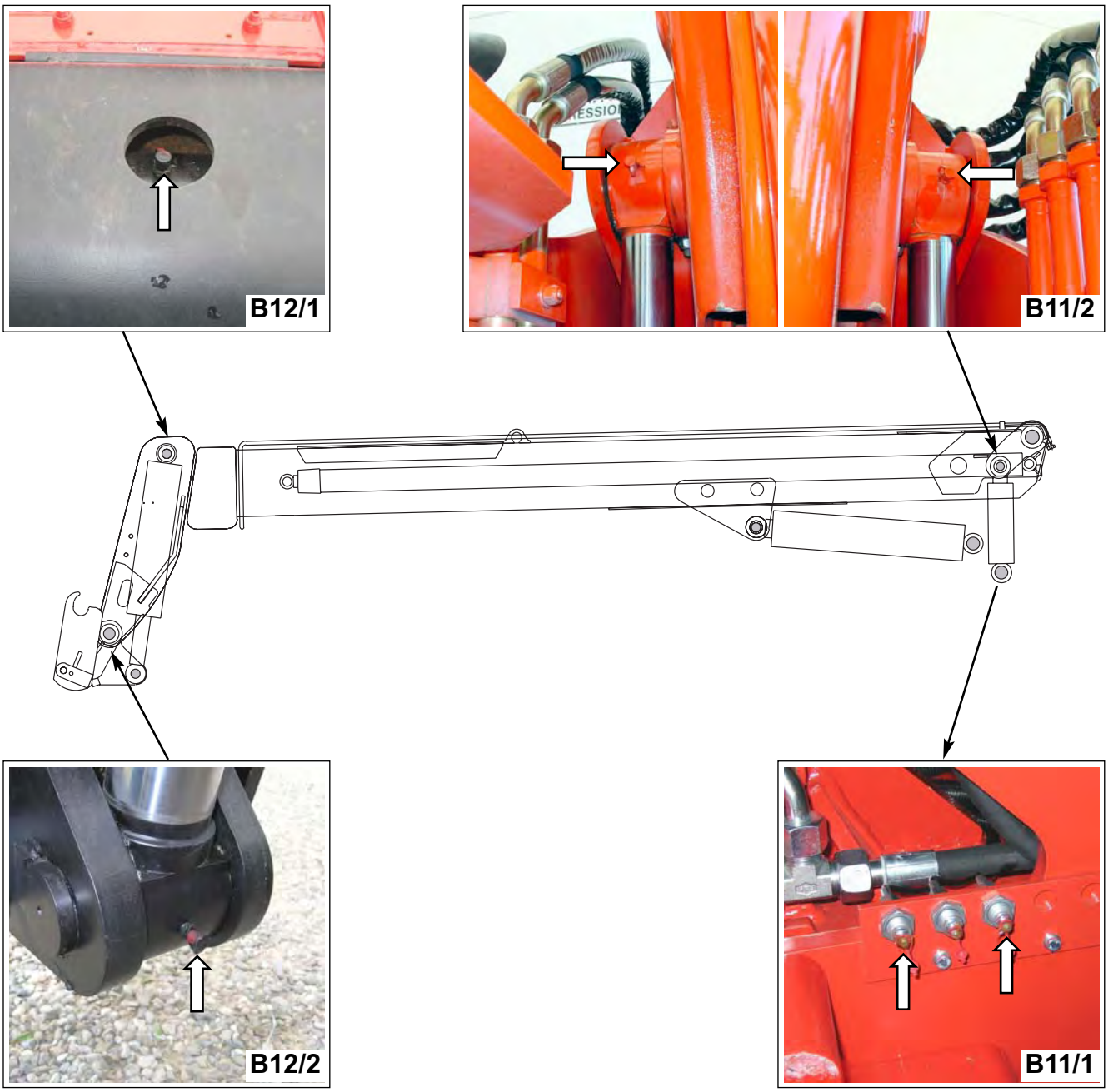
B 9 - CLEAN AND GREASE QUICK RELEASE ARTICULATION PIN

B 10 - CLEAN AND GREASE LIFT JACK BASE (Fig.B10/1) AND ROD (Fig.B10/2) PINS



B 11 - CLEAN AND GREASE COMPENSATION JACK BASE (Fig.B11/1) AND ROD (Fig.B11/2) PINS

B 12 - CLEAN AND GREASE SLEWING CYLINDER- BASE (Fig.B12/1) AND ROD (Fig.B12/2) PINS

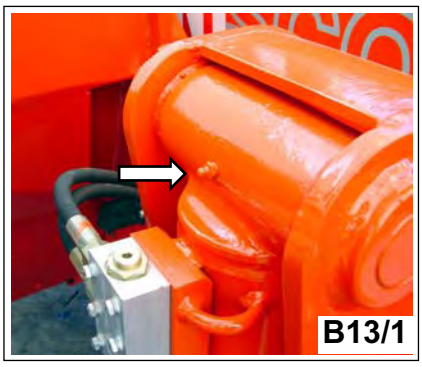


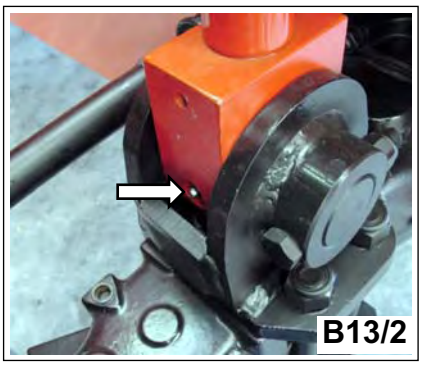
B 13 - CLEAN AND GREASE LEVELLING JACK BASE (Fig.B13/1) AND ROD (Fig.B13/2) PINS

B 14 - CLEAN AND GREASE THE TWO FRONT AXLE OSCILLATION BUSHINGS (Fig.B14/1 - Fig.B14/2)

B 15 - CLEAN AND GREASE THE TWO REAR AXLE OSCILLATION BUSHINGS (Fig.B15/1 - Fig.B15/2)

B 16 - CLEAN AND GREASE CROSS JOURNALS AND CARDAN SHAFT (Fig.B16/1 - Fig.B16/2)


B13/1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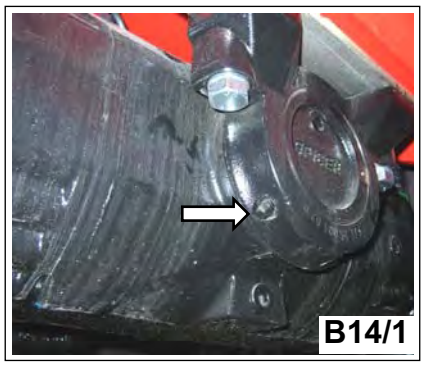
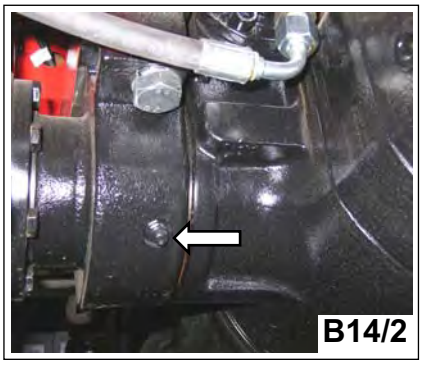

B14/1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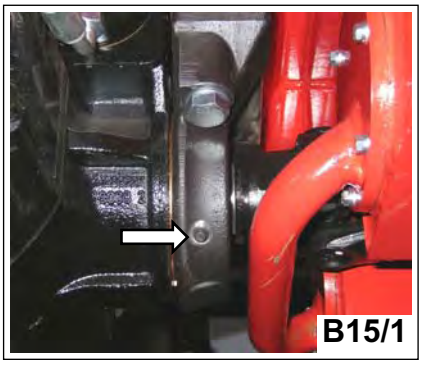
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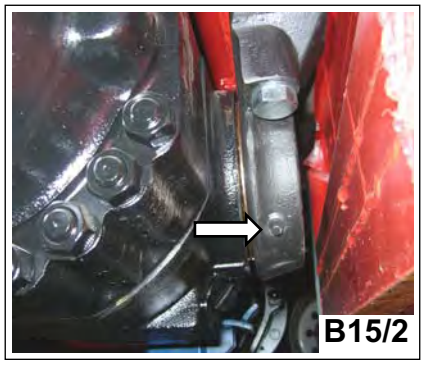
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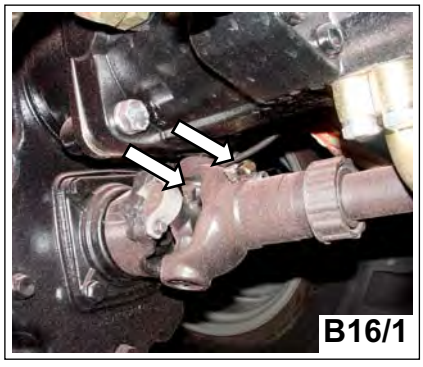
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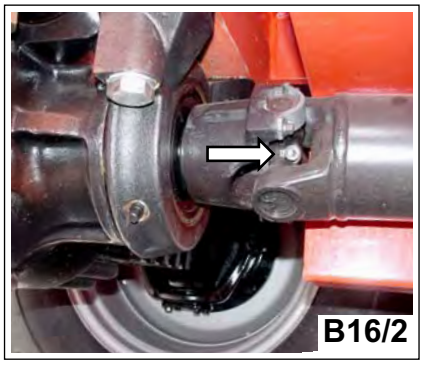
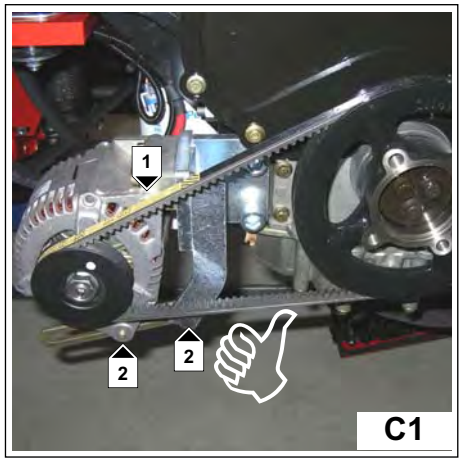

B16/2

C - EVERY 250 HOURS OF SERVICE

C 1 - CHECK ALTERNATOR BELT TENSION/ DRIVING SHAFT

The alternator belt tension must be adjusted in such a manner that, when pressed normally with the thumb, the belt must give by about 10 mm (Fig. C1).

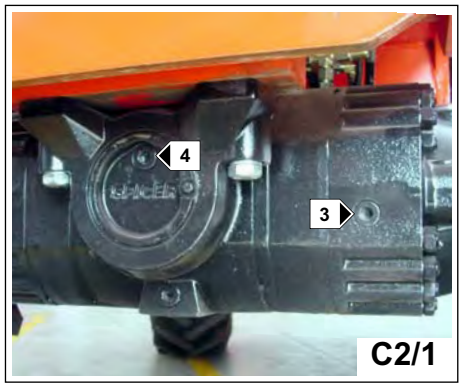
If the tension is not correct, slacken screws “1” and “2” (Fig. C1) by 2 or 3 turns of the thread and rotate the alternate unit to obtain the required tension.
Retighten screws “1” and “2” (Fig. C1).
Check the condition of the belt (for signs of wear or cracks) and replace it, if necessary (see operation No. E8).



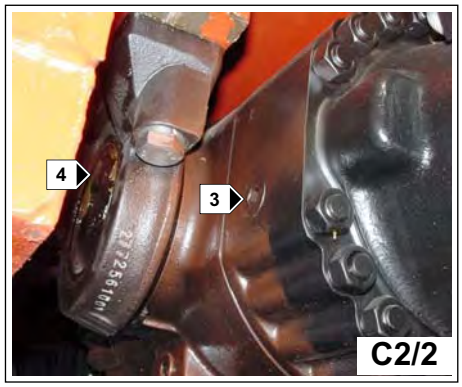
C1

C 2 - CHECK THE FRONT AND REAR AXLE DIFFERENTIAL OIL LEVEL

Position the lift truck on a level surface, with the engine switched off.
Check the front axle differential oil level.
Remove plug “3” (Fig. C2/1).
The oil level must reach the hole.
If necessary, add oil through filler hole “4” (Fig. C2/1). (see the “LUBRICANTS“ Table).
Repeat this operation for the rear axle differential (Fig. C2/2).



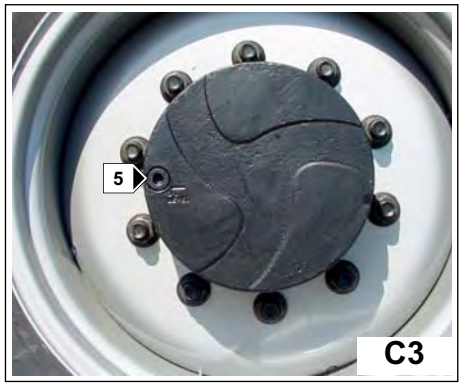
C2/1



C2/2

C 3 - CHECK THE FRONT AND REAR WHEEL REDUCTION GEAR OIL LEVEL

Position the lift truck on a level surface, with the engine switched off.
Check the level on the reduction gear of each front wheel.
Turn level plug “5” (Fig. C3) to the horizontal position.
Remove the plug: the oil level must reach the hole.
Add oil, if necessary (see “LUBRICANTS” Table).
Repeat the operation for each of the rear wheels.

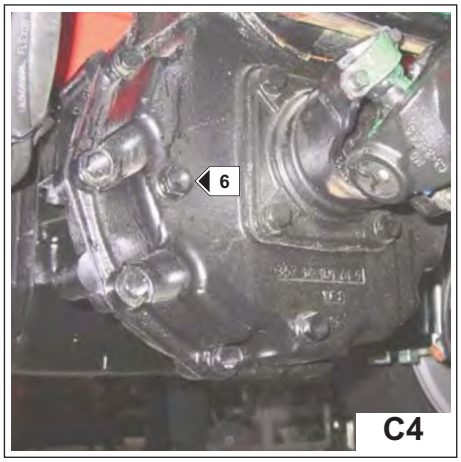


C3

C 4 - CHECK THE TRANSMISSION BOX OIL

Position the lift truck on a horizontal surface, with the combustion engine switched off.

- Remove level plug “6” (Fig. C4), the oil must reach the level of the opening.
- Top up with oil, if necessary (See the “LUBRICANTS” Table).
- Refit and retighten level plug “6” (Fig. C4).



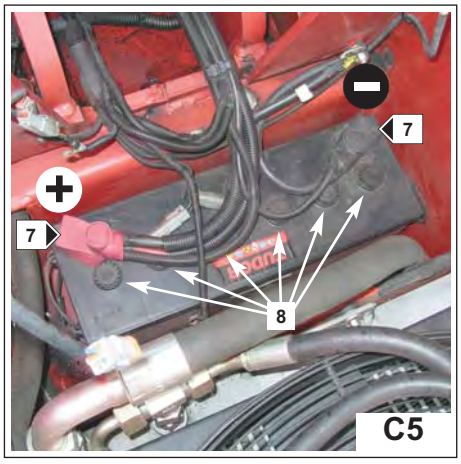
C 5 - CHECK THE BATTERY

Check the electrolyte level in the battery (if the battery specifications require it).

In high environmental temperatures, check the level more frequently.

Maintenance:

- Check connecting terminals “7” (Fig. C5).
- Check the electrolyte level regularly and, if necessary, top up with demineralized or distilled water; never add sulphuric acid (strictly follow the indications on the battery).
- If the voltage at the battery poles is less than 12.3 V, recharge the battery.
- Disconnect the battery if the truck is to remain unused for long periods.



Charging the battery:

- Remove the caps “8” (Fig. C5) (if possible).
- Only direct current must be used for recharging the battery.
- Connect the positive wire (+) of the battery charger to the positive pole(+) of the battery and the negative wire (-) of the battery charger to the negative pole (-) of the battery.
- Charge using a current 1/10 of the battery’s rated capacity (Ah).
- When charging is complete, switch off the battery charger before disconnecting the battery.
- Check the electrolyte level.

D - EVERY 500 HOURS OF SERVICE OR YEARLY

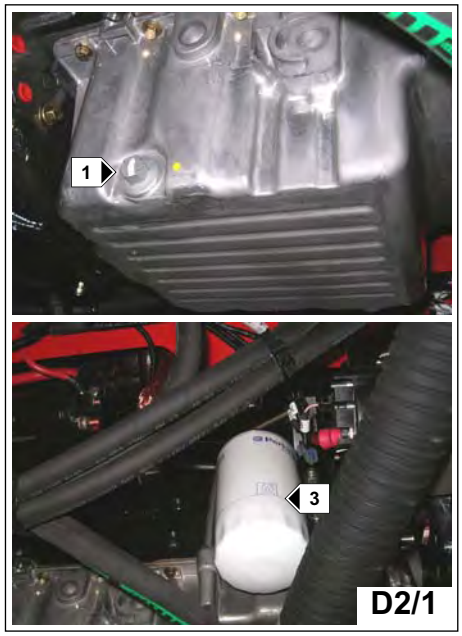
D 1 - DRAIN OUT AND CHANGE COMBUSTION ENGINE OIL

D 2 - REPLACE THE ENGINE OIL FILTER

Position the lift truck on a level surface, let the engine run at minimum speed for a few minutes and then switch it off.

Emptying the engine oil pan
Place a container under drain plug “1” (Fig. D2/1) and unscrew the plug.
Remove filler plug “2” (Fig. D2/2) to facilitate drainage.

Replacing the filter
Remove oil filter “3” (Fig. D2/1), reject the filter and its gasket.
Wipe the filter support with a clean cloth.
Lubricate the new gasket lightly.
Fit a new filter having identical specifications (“FILTER ELEMENTS AND BELTS”).



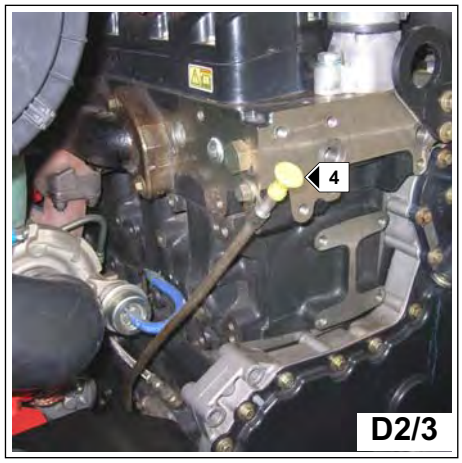
D2/1

Tighten the oil filter manually and turn it through a quarter of a turn to lock it in place.

Dispose off the filter and used oil according to the regulations in force in the country of use.

Filling the engine oil pan
Refit and tighten drain plug “1” (Fig. D2/1).
Fill oil as shown in the Table (“LUBRICANTS”) through filler hole “2” (Fig. D2/2).
Wait for a few minutes to allow the oil to flow down into the pan.
Start up the engine and leave it running for a few minutes.
Check for leakage from the drain hole and the oil filter.
Stop the engine, wait for a few minutes and check the level using rod “4” (Fig. D2/3).
Top up, if necessary.

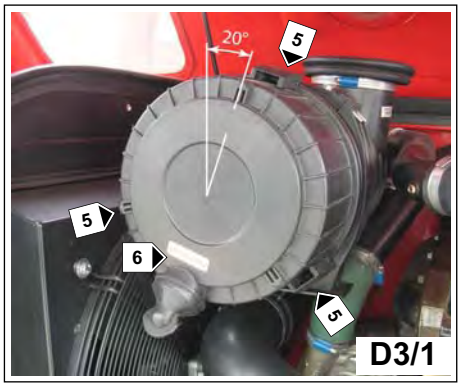
D2/2



D2/3

D 3 - REPLACE THE AIR FILTER CARTRIDGE

The air used for combustion of the fuel is purified by a dry air filter; never use the lift truck with the air filter dismantled or damaged.
Release blocks “5” (Fig. D3/1) and remove cover “6” (Fig. D3/1).
Remove cartridge “7” (Fig. B3/2) very carefully to reduce dust leakage to the minimum and dispose it according to the regulations in force in the country of use.
Do not remove the safety cartridge.
Wipe the inside of the filter with a damp, clean cloth that does not leave residue.



D3/1

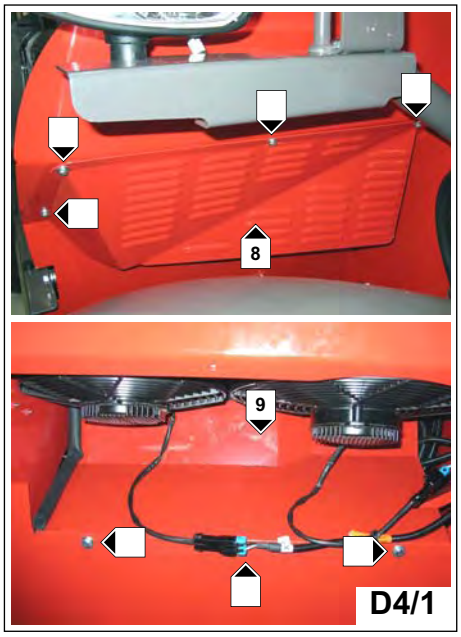
Never wash an air filter cartridge.

D3/2

Fit a new cartridge “7”(Fig. D3/2) having identical features (see Table “FILTER ELEMENTS AND BELTS”) inserting it on the filter rod, pressing the cartridge along the edges, not in the middle.
Refit cover “6” (Fig. D3/1) orienting the valve correctly (for correct working of the valve, do not exceed an inclination of approx. 20°) and tighten the blocks “5” (Fig. D3/1).

D 4 - REPLACE ENGINE BASE VENT CARTRIDGE

Make sure the engine is stopped before carrying out maintenance or repairs on it.
To access the engine base vent cartridge, remove the intercooler radiator partitions “8” and “9” (Fig. D4/1) using a 10 mm hex wrench.
Place a container under the vent cartridge “10” (Fig. D4/2).
Using a suitable tool, remove the engine base vent cartridge “10” (Fig. D4/2).
Lubricate the O-ring of the new cartridge with clean engine oil.
Insert the new cartridge (see Table “FILTER ELEMENTS AND BELTS”) and screw it in manually by applying a torque not greater than 12 Nm.
Dispose off the used cartridge and oil contained in it in accordance with the regulations in force in the country of use.



D4/1

D4/2

D 5 - REPLACE THE FUEL FILTER CARTRIDGE

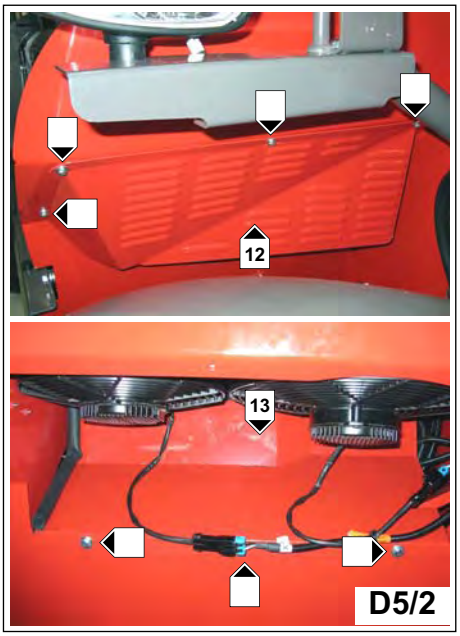
The combustible materials of certain engine components (such as the seals) can be extermely dangerous if burnt. Never allow such material to come in contact with the skin or the eyes.
Check to make sure the ignition key is turned off before carrying out maintenance or repairs on the fuel supply system, since the pump will start supplying fuel if the engine is switched on.
Do not let impurities enter the fuel supply system. Before disconnecting a union, clean the surrounding surface carefully. After disconnecting one of the components, fit a suitable cover on all open unions.

D5

Make sure the engine is stationary before carrying out maintenance or repairs on it.
After the engine is stopped, before carrying out maintenance and repair operations on the fuel pipes, wait for 60 seconds to allow pressure to be discharged.
Eliminate leaks, if any, from the supply system.
Replace the fuel piping that has leaks.

- Place a suitable container under the fuel filter unit to collect the fuel that flows out.
- Clean the outer surfaces of the fuel filter thoroughly.
- Use a suitable tool to dismantle the used fuel filter “11” (Fig. D5) from the engine.
- Dispose off the used cartridge and the liquid contained in it in accordance with the regulations in force in the country of use.
- Make sure dirt cannot enter the new fuel filter (see Table “FILTER ELEMENTS AND BELTS”).
  Do not fill the new fuel filter before assembly.
  Do not lubricate the sealing ring on the new fuel filter.
- Insert the new filter.
  Do not use a tool to insert the filter.
  Tighten the filter manually.

Remove the container and dispose off the liquid in accordance with the regulations applicable in the country of use.

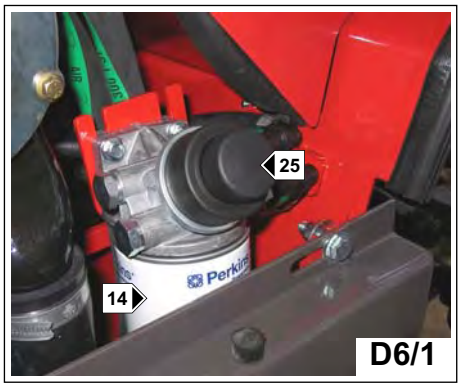


D5/2

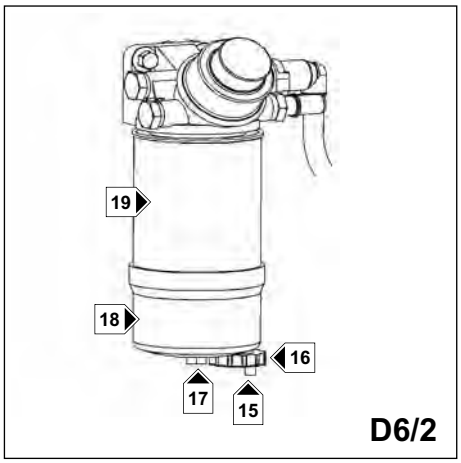
Refit the two intercooler radiator partitions “12” and “13” (Fig. D5/2) using a 10 mm hex wrench.

D 6 – REPLACE THE FUEL FILTER CARTRIDGE WITH WATER SEPARATOR

- Place a suitable container under the fuel filter with water separator "14" (Fig. D6/1) to collect the liquid that flows out.
- Clean the outer surfaces of the filter thoroughly.
- Install a suitable tube on outlet "15" (Fig. D6/2).
- Open drainage outlet "16" (Fig. D6/2) and let the liquid drain out completely into the container.
- Close the drainage opening "16" (Fig. D6/2) tightening it only manually and remove tube "15" (Fig. D6/2).
- Slacken screw "17" (Fig. D6/2) holding the glass cup "18" steady (Fig. D6/2).
- Remove the glass cup "18" (Fig. D6/2) from cartridge "19" (Fig. D6/2).
- Use a suitable tool to remove cartridge "19" (Fig. D6/2).
- Dispose off the used cartridge "19" (Fig. D6/2) and the old gaskets "20 - 21" (Fig. D6/3) according to the regulations in force in the country of use.
- Clean the glass cup "18" (Fig. D6/2) using a clean cloth that does not leave residues.
- Make sure dirt cannot enter the new fuel filter (see Table "FILTER ELEMENTS AND BELTS").
  Do not lubricate the sealing ring on the new fuel filter.
- Insert the new filter "22" (Fig. D6/3).
  Do not use a tool to insert the filter.
  Tighten the filter manually.
- Insert the new sealing ring "20" (Fig. D6/3) on fixing screw "23" (Fig. D6/3).
- Insert the new sealing ring "21" (Fig. D6/3) on glass cup "24" (Fig. D6/3).
- Align the glass cup "24" (Fig. D6/3) with filter "22" (Fig. D6/3).
- Insert fixing screw "23" (Fig. D6/3).
- Remove the container and dispose off the liquid in accordance with the regulations applicable in the country of use.



D6/1



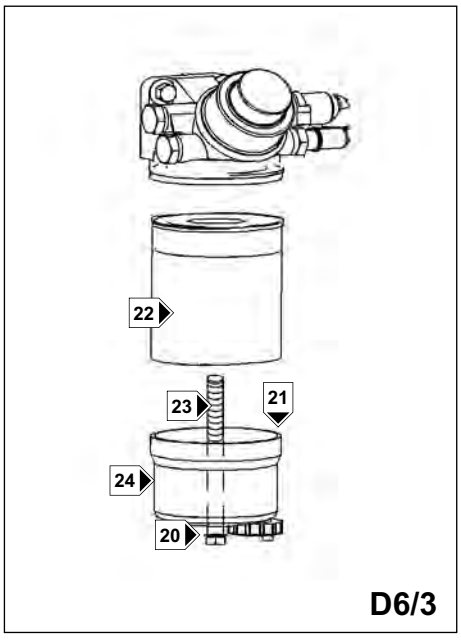
D6/2

Manual priming pump (on fuel filter with water separator)

To bleed air from the supply system, proceed as follows:

- Make sure the supply system is in good working condition.
- Activate priming pump "25" (Fig. D6/1) until it is blocked.
- The supply system must now be primed and the engine must be able to start up.
- Activate the starter motor.
  Once the engine starts up, let it run at minimum speed without load for at least five minutes immediately after having bled the air from the supply system.

Note: This will ensure that no air is present in the supply system.



D6/3

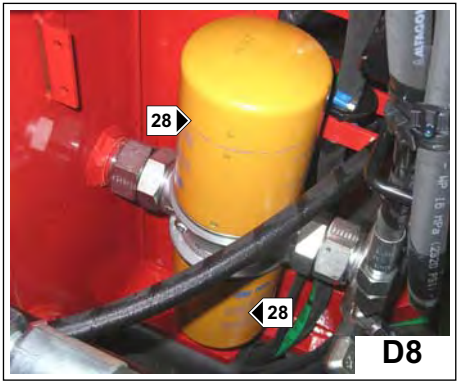
D 7 - REPLACE TRANSMISSION OIL FILTER

Using a collar wrench, remove the transmission oil filter “26” (Fig. D7) and dispose it off together with the gasket in accordance with the regulations in force in the country of use.
Wipe the filter support with a clean cloth that does not leave residue.
Fit a new filter having identical features (see Table “FILTER ELEMENTS AND BELTS”) ***using only your hands*** making sure the gasket is positioned correctly after lubricating it.
Start up the lift truck and check for leaks.
Check the working efficiency of the filter on indicator “27” (Fig. D7).

D7

D 8 - REPLACE HYDRAULIC OIL FILTERS (EXHAUST)

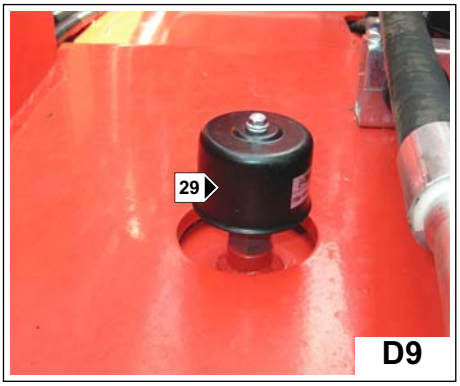
Using a box wrench, dismantle the two hydraulic oil filters “28” (Fig. D8) and discard them together with the gaskets.
Wipe the filter supports with a clean cloth that does not leave residue.
Fit the new filters having identical features (see Table “FILTER ELEMENTS AND BELTS”) ***using only your hands*** making sure the gasket is positioned correctly after lubricating it.
Start up the lift truck and check for leaks.



D8

D 9 - REPLACE THE TRANSMISSION AND HYDRAULIC OIL TANK VENT FILTER

Slacken vent “29” (Fig. D9) on the back of the cab and replace it with a new one having identical features; see Table “Filter elements and belts”).
Fit the new vent, tightening it manually.



D9

D 10 - REPLACE THE CAB VENTILATION FILTER CARTRIDGE

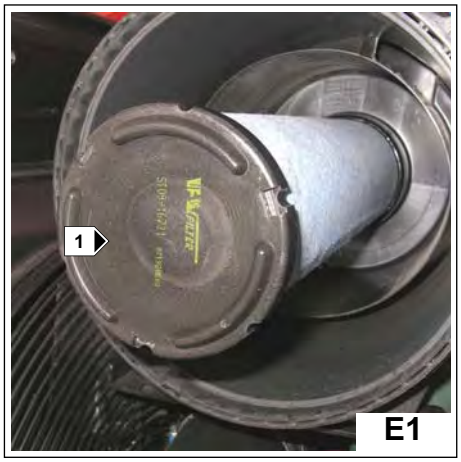
Remove guard “30” (Fig. D10).
Remove cab ventilation filter “31” (Fig. D10).
Clean the filter using a jet of compressed air.
Check thje condition of the filter and, if necessary, replace the cartridge with a new one having identical features (see Table “FILTER ELEMENTS AND BELTS”).
Refit the filter and guard.

D10

E - EVERY 1000 HOURS OF SERVICE OR YEARLY

E 1 - REPLACE THE AIR FILTER SAFETY CARTIDGE

Dismantle the air filter (see operation D3).
Remove cartridge “1” (Fig. E1) very carefully to reduce dust leakage to the minimum and dispose it according to the regulations in force in the country of use.
Wipe the inside of the filter with a damp clean cloth that does not leave residue, protecting the combustion engine inlet pipe.



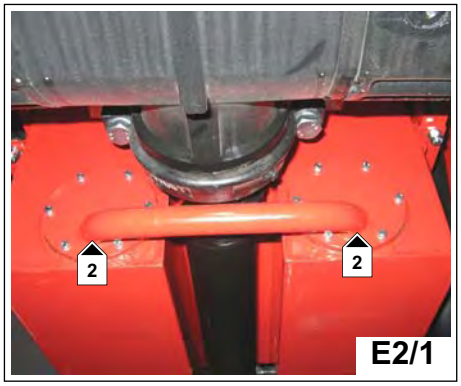
E1

Never wash an air filter cartridge.

Fit a new cartridge “1”(Fig. E1) having identical features (see Table “FILTER ELEMENTS AND BELTS”) in place of the one removed, inserting it on the filter rod, pressing the cartridge around the edges, not in the middle.
Refit the assembly (see operation D3).

E 2 - DRAIN AND CHANGE THE HYDRAULIC OIL

Before carrying out these operations, make sure the lift truck is parked on a level surface, with the engine switched off.
Place a container under the flanges with connecting tube “2” (fig. E2/1).
To unscrew the 12 screws and to remove the flanges with connecting tube “2” (fig. E2/1).
To hasten drainage, remove filler plug “3” to let air in (fig. E2/2).
When the tank is empty, refit the flanges with connecting tube “2” (fig. E2/1) tightening the 12 fixing screws 12 and proceed with dismantling the hydraulic oil filter cartridge (suction side) (See operation E3).
Dispose off the used oil according to the regulations in force in the country of use.



E2/1

E2/2

E 3 - REPLACE HYDRAULIC OIL SUCTION FILTER CARTRIDGE

Drain out the hydraulic oil tank (see E2).
Remove hydraulic oil filter cartridge holder flange “4” (Fig. E3/1).
Remove the hydraulic oil suction filter cartridge “5” (Fig. E3/2) from the flange and replace it with a new one having identical features (see Table “FILTER ELEMENTS AND BELTS”).
Dispose off the used filter according to the regulations in force in the country of use.
Refit hydraulic oil filter cartridge holder flange “4” (Fig. E3/1), ensuring the correct positioning.

E3/1

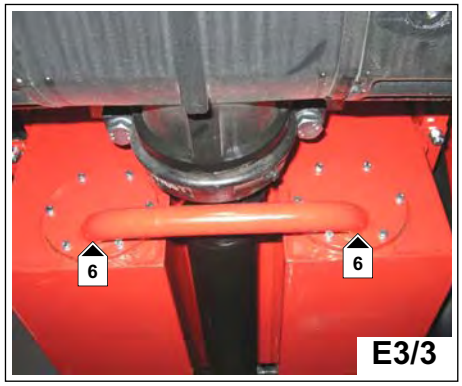
E3/2

Filling the tank

Check to make sure the flanges with connecting tube “6” (fig. E3/3) are locked tight.
Fill theoil tank (see Table “OILS - GREASE - FLUIDS - FUELS - FILTERS”) through filler hole “7” (Fig. E3/4) till the oil level reaches the marking on level indicator “8” (Fig. E3/5).
Check for leakage from the flanges with connecting tube “6” (fig. E3/3) and flange “4” (Fig. E3/1).
Refit the tank cap “7” (fig. E3/4).

Use filtered uncontaminated oil.

It may sometimes be necessary to leave the combustion engine running at low speed for a few minutes to bleed the pumps inlet circuits, if an air bubble has been formed during drainage. If air bubbles persist, consult your agent or dealer.



E3/3

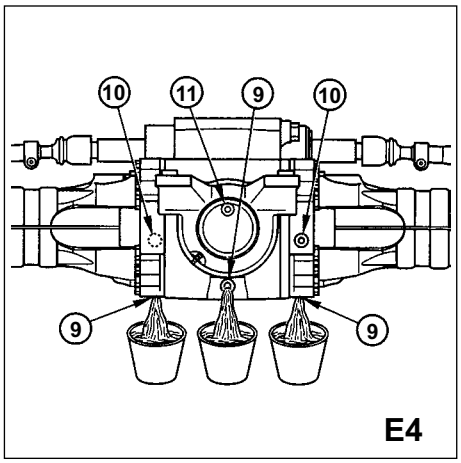
E3/5

E3/4

E 4 - EMPTY AND CHANGE THE FRONT AND REAR AXLE DIFFERENTIAL OIL

Park the lift truck on a level surface, with the engine switched off and the differential oil still warm.

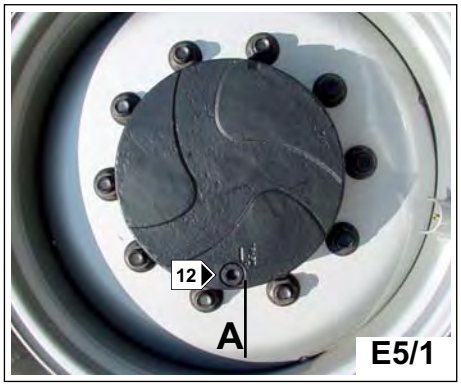
Drain out the front axle differential oil.
Place a container under drain plugs “9” (Fig. E4) and let the oil drain out.
Remove level plug “10” (Fig. E4) and filler plug “11” (Fig. F4) to ensure complete drainage.
Refit and tighten plugs “9” (Fig. E4).
Fill oil (see Table “LUBRICANTS”) through filler hole “11” (Fig. E4).
The level is correct when the oil reaches the level hole “10” (Fig. E4).
Check for leakage from the drain plugs.
Refit and tighten level plug “10” (Fig. E4) and refit plug “11” (Fig. E4).
Repeat the operation for the rear axle differential.
Dispose off the used oil according to the regulations in force in the country of use.



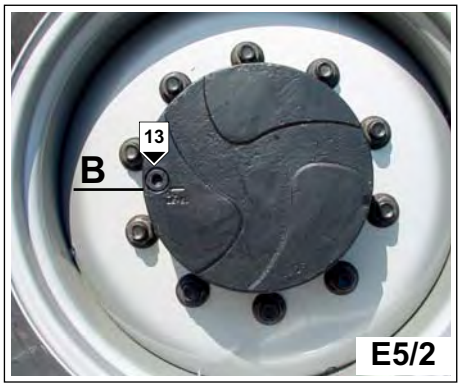
E4

E 5 - EMPTY AND CHANGE THE FRONT AND REAR WHEEL REDUCTION GEAR OIL

Park the lift truck on a level surface, with the engine switched off and the differential oil still warm.
Drain each front wheel reduction gear.
Turn the drain and level plug “12” (Fig. E5/1) downwards to position “A”.
Place a container under the drain plug and unscrew the plug.
Let all the oil flow out.
Turn the drain and level hole to horizontal position “B” (Fig. E5/2) i.e. in the level position.
Fill oil (see Table “LUBRICANTS”) through drain and level hole “13” (Fig. E5/2).
The level is correct when the oil reaches hole “13” (Fig. E5/2).
Refit drain and level plug “13” (Fig. E5/2) and tighten it.
Repeat the operation for each of the rear wheel reduction gears.
Dispose off the used oil according to the regulations in force in the country of use.



E5/1

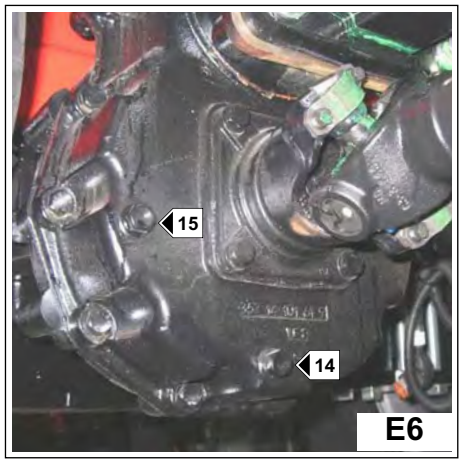


E5/2

E 6 - CHANGE THE TRANSMISSION BOX OIL

The lift truck must be parked on a level horizontal surface, with the combustion engine switched off and the gear oil still warm.

Place a container under drain plug “14” (Fig. E6) and let all the oil flow out.
Remove level and filler plug “15” (Fig. E6) to make sure the tank is completely drained.
Screw oil drain plug “14” (Fig. E6).
Fill oil (see Table “LUBRICANTS”) through filler hole “15” (Fig. E6).
Check for leakage through drain plugs.
Dispose off the used oil according to the regulations in force in the country of use.



E6

E 7 - EMPTY AND CLEAN FUEL TANK

During this operation, avoid smoking or using a flame.

- Position the lift truck on a level horizontal surface; the combustion engine must be switched off.

- Inspect the parts subject to leakage on the fuel circuit and the tank.

- Contact your agent or dealer, in case of leakage.

E7/1

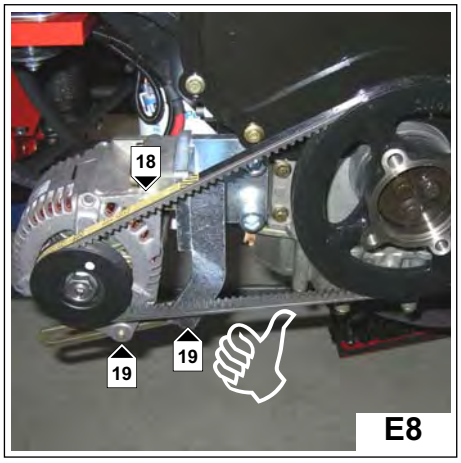
Never try to carry out welding or other operations yourself: this can result in an explosion or fire.

- Place a container under drain plug “16” (Fig. E7/1) and unscrew the plug.
- Remove filler plug “17” (Fig. E7/2).
- Let all the fuel flow out and rinse with 10 litres of clean fuel poured through the filler hole.
- Refit and tighten drain plug “16” (Fig. E7/1).
- Fill the tank with clean fuel filtered through a suction rose or a clean cloth that does not leave residue; then refit the filler plug “17” (Fig. E7/2).
- Before operating the starter motor, run the suction pump for one minute to bleed air from the filter.
- Let the engine run in neutral for a few minutes at minimum speed.

E7/2

E 8 - REPLACE THE ALTERNATOR BELT/ DRIVING SHAFT

Position the lift truck on a level surface with the combustion engine switched off.
Unscrew the alternator fixing screws “18” and belt-tightener lever retainer bolt “19” (Fig. E8) through 2 or 3 turns of the thread and turn the alternator position to slacken the belt tension to remove it from the pulley.
Replace the belt with a new one having identical features, see Table “FILTER ELEMENTS AND BELTS”), turn the alternator position to tighten the belt correctly.
Tighten the belt-tightener retainer bolt “19” (Fig. E8) and alternator fixing screws “18” (Fig. E8).
Check the belt tension again to make sure it is correct.
It is advisable to check the belt tension again after 20 hours of operation following replacement (see operation No. C1).



E8

E 9 - REPLACE TRANSMISSION HYDRAULIC OIL FILLER AND VENT PLUG

Unscrew the transmission hydraulic oil filler and vent plug “20” (Fig. E9) in the back of the cab and replace it with a new one having identical features (see Table “FILTER ELEMENTS AND BELTS”).
Fit the new transmission hydraulic oil filler and vent plug and tighten it manually.

E9

E 10 - CHECK THE TELESCOPIC BOOM PADS FOR WEAR

For these operations, contact your agent or dealer.

E 11 - CHECK THE ENGINE VALVES CLEARANCE

This operation must be carried out after the first 500 hours of operation and periodically every 1000 hours of operation.
For these operations, contact your agent or dealer.

F - EVERY 2000 HOURS OF OPERATION OR EVERY 2 YEARS

F 1 - CHECK THE ALTERNATOR AND STARTER MOTOR

F 2 - CHECK THE TURBO COMPRESSOR

F 3 - CHECK THE RADIATOR

F 4 - CHECK WATER PUMP AND THERMOSTAT

FOR THESE OPERATIONS CONSULT YOUR AGENT OR DEALER.

F 5 - REPLACE COOLING CIRCUIT LIQUID

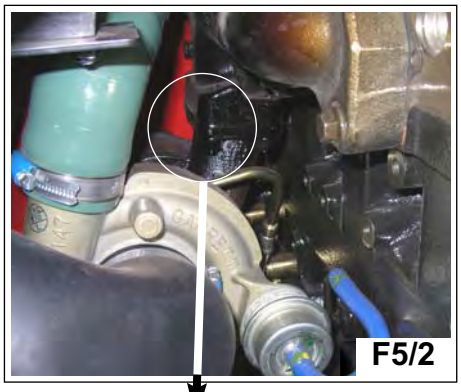
This series of operations must be carried out whenever it is necessary or at least once every two years before the winter. Position the fork lift truck on level ground with the I.C. engine switched off and cold.

Do not drain the coolant liquid when the engine is hot and the coolant is under pressure, since there is risk of a dangerous jet of boiling hot liquid being thrown out.

Position the forklift truck on a horizontal surface, stop the I.C. engine and leave it to cool.

Place a container under the rubber hose pipe “1” (fig. F5/1) of the radiator and drainage plug “2” (fig. F5/2) of the engine block. Remove the rubber hose pipe “1” (fig. F5/1) and slacken the drainage plug “2” (fig. F5/2).
Remove the filler plug “3” (Fig. F5/3) of the radiator.
Drain out the cooling circuit completely, ensuring that the openings are not obstructed.
Check the condition of the hose pipes and their fittings. replace them, if necessary.
Clean the system with clean water and use a detergent product, if necessary.

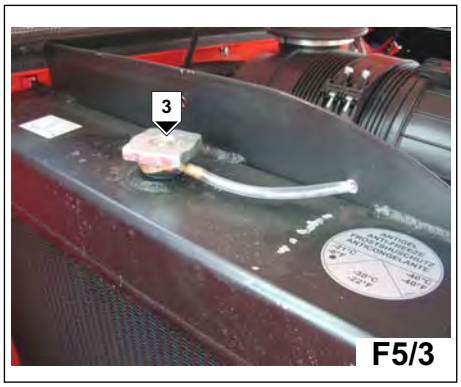
F5/1


F5/2

To avoid damage caused by frost, ensure that all the coolant liquid is removed from the engine. This is important in case the system is drained after being rinsed with water or in case a very weak anti-freeze solution is used to protect the system from frost.

Refit and tighten the rubber hose pipe “1” (Fig. F5/1) and the drainage plug “2” (fig. F5/2) tightening torque 40 Nm.).
Prepare the cooling liquid (see Table F5/4).
Fill the cooling system slowly up to 12 mm below the filler neck.
Refit the filler plug “3” (Fig. F5/3).
Leave the engine running at minimum speed for a few minutes.
Check for leaks.
Check the level and add more liquid, if necessary.
Dispose off the used liquid according to the regulations in force in the country of use.

The engine has no anticorrosion elements and must be kept filled throughout the year with a mixture with a minimum 25% content of anti-frost.



F5/3

TABLE F5/4
FREEZING POINT DEPENDING ON % OF ANTIFREEZE

Antifreeze (MANITOU ANTIFREEZE)	Temperature
25%	-12°
33%	-19°
40%	-26°
50%	-38°

G - OCCASIONAL MAINTENANCE

G 1 - CHANGING A WHEEL

If the wheel needs replacement while travelling on the road, proceed as described below:

- If possible, stop the lift truck on level, compact ground.
- Switch the lift truck off (see: 1 - SAFETY INSTRUCTIONS AND REGULATIONS: INSTRUCTIONS FOR DRIVING WITH AND WITHOUT LOAD).
- Turn the emergency lights On.
- Apply wedges to block the lift truck in both directions on the axle opposite the wheel to be replaced.
- Slacken the bolts of the wheel to be replaced so that they can be removed without much effort.
- Fit and adjust jack “1” (fig. G1/1) under the axle shaft, as close as possible to the wheel.
- Raise the wheel off the ground and position safety support “2” (Fig. G1/2) under the axle.

G1/1

The use of a safety support is compulsory for carrying out this operation.

- Unscrew the wheel bolts completely and remove them.
- Remove the wheel using to-and-fro movements and turn it on the side.
- Place the new wheel on the hub.
- Screw the bolts manually, lubricating with grease, if necessary.
- Remove the safety support and lower the lift truck by means of the jack.
- Tighten the wheel bolts completely using a dynamometric wrench (see: 3 - MAINTENANCE: A - DAILY OR EVERY 10 HOURS OF SERVICE, for tightening torque).

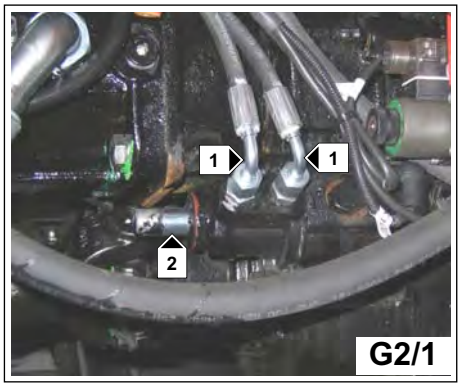
G1/2

G 2 - TOWING THE LIFT TRUCK

Towing must be done at very low speeds for short distances.

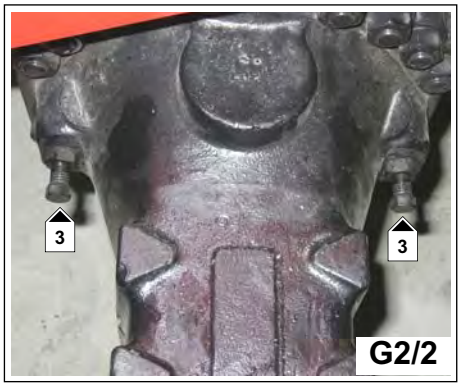
- Set the reverse gear lever in neutral.
- Disengage the parking brake.
- Switch on the emergency lights.

- Position the gear in neutral manually:
  a) disconnect and plug the hydraulic hoses “1” (Fig. G2/1) from the slow/fast gear box cylinder;
  b) lever on rod “2” (Fig. G2/1) of the gear box to pull it out and bring it to the neutral position (intermediate position between the two successive “clicks”).



G2/1

- Deactivate the negative brake:
  a) screw nuts with lock nuts 3 (Fig. G2/2) on the two sides of the front axle box until they rest against the piston.
  b) then rotate through one turn.



G2/2

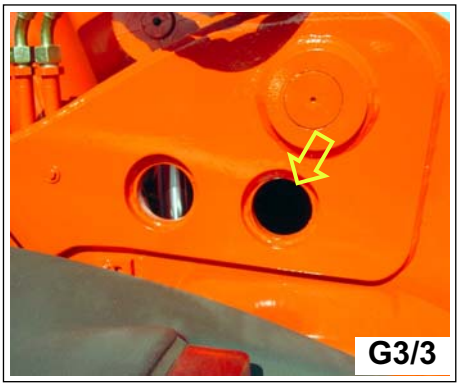
Attention
The opposite screws must be tightened to the same extent.

- In the absence of hydraulic servo-assistance of direction and brakes, act slowly but firmly on these two commands.
  Avoid sudden, jerky movements.

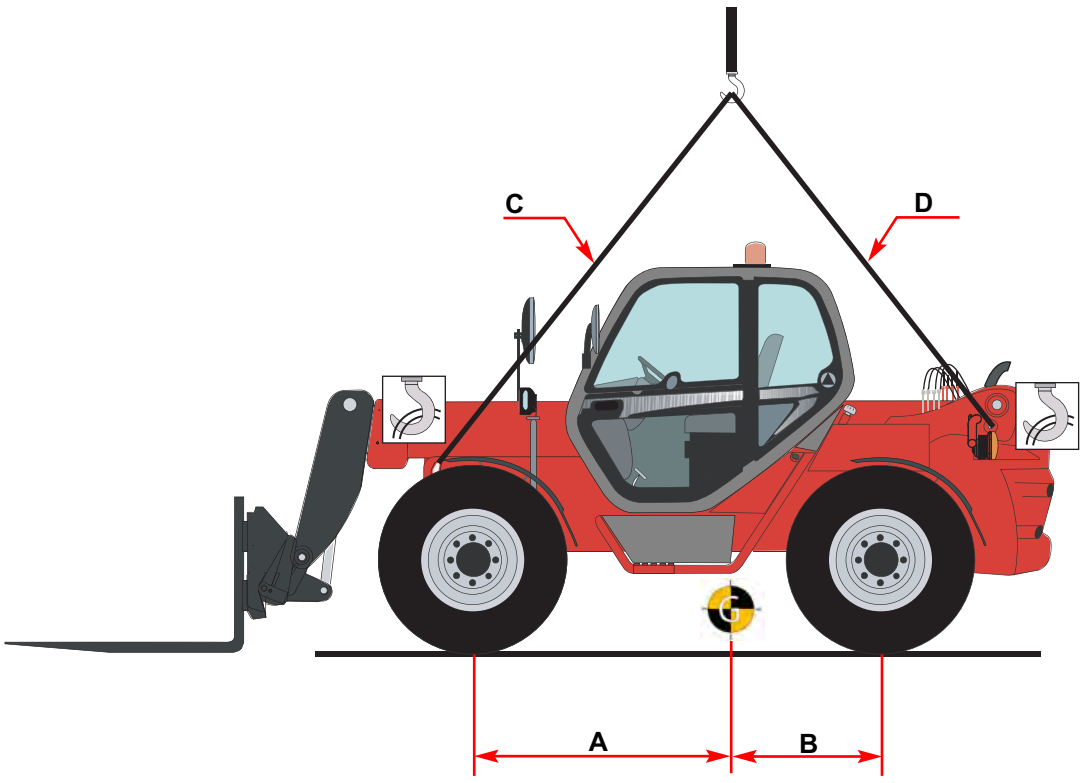
G 3 - SLINGING THE LIFT TRUCK

- Take into consideration the position of the truck's centre of gravity for lifting (Fig. G3/1).
- Position the belts in the anchoring seats provided (Fig. G3/2) and (Fig. G3/3).

G3/2



G3/3



MHT 860 L
A = 1663 mm
B = 1067 mm
C = 2785 mm
D = 2405 mm
G = Position of centre of gravity

MHT 950 L
A = 1712 mm
B = 1018 mm
C = 2855 mm
D = 2425 mm
G = Position of centre of gravity

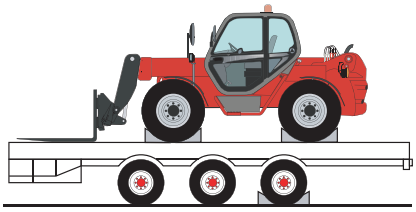
G3/1

G 4 - TRANSPORTING THE LIFT TRUCK ON A PLATFORM

Check to ensure that the safety instructions regarding the transport platform are applied correctly before loading the lift truck on it, and make sure the truck driver is familiar with the dimensional features and weight of the lift truck (See Chapter: TECHNICAL SPECIFICATIONS in part 2 - DESCRIPTION).

Ensure that the dimensions and loading capacity of the platform are sufficient for transporting the lift truck. Also check the contact pressure with the ground authorized for the platform with respect to the lift truck.

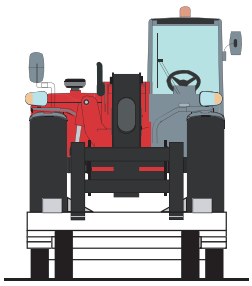
For lift trucks provided with a turbo compressed engine, plug the exhaust to prevent rotation, without lubrication, of the turbo shaft when the convoy is in motion.



G4/1

LOADING THE LIFT TRUCK

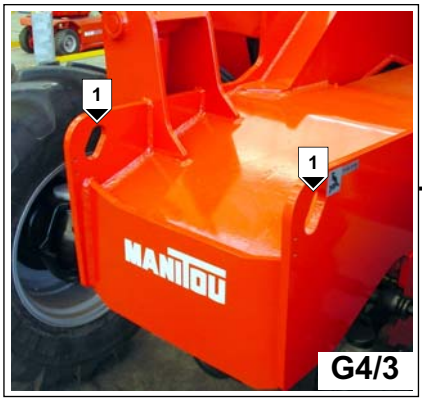
- Block the transport platform wheels.
- Fix the platform loading ramp, in such a manner as to obtain the smallest possible angle to allow the truck to climb on the platform.
- Load the lift truck parallel to the platform.
- Switch off the lift truck (see chapter: DRIVING INSTRUCTIONS in part: 1 - SAFETY INSTRUCTIONS AND REGULATIONS).



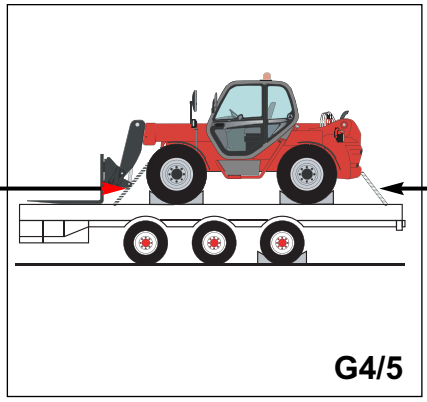
G4/2

SLINGING THE LIFT TRUCK

- Fix the wedges in front and at the back of each tyre (Fig. G4/1).
- Also fix wedges on the inner sides of each tyre (Fig. G4/2).
- Fix the lift truck on the platform with sufficiently resistant ropes, on the front of the lift truck at the anchoring points “1” (Fig. G4/3), and on the rear part in the tow pin “2” (Fig. G4/4).
- Tighten the ropes (Fig. G4/5).



G4/3



G4/5

G4/4

G 5 - ADJUST THE HEADLIGHTS

RECOMMENDATIONS FOR THE ADJUSTMENTS
(In accordance with standards ECE-76/756 76/761 ECE20)

Adjust the low beam by -2% with respect to the horizontal axis of the headlight.

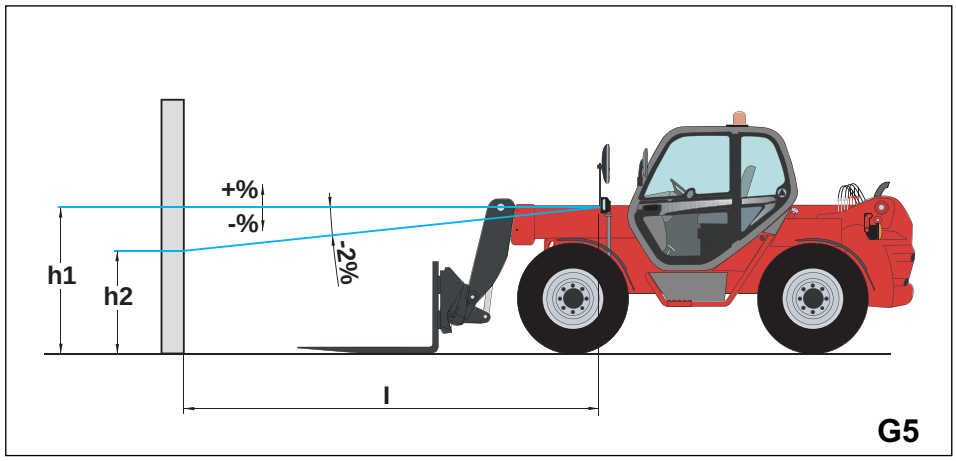
ADJUSTMENT PROCEDURE

- Set the lift truck, without load, in the transport position, perpendicular to a white wall, on level, horizontal ground (Fig. G5).
- Check the tyre pressure (See chapter: A5 - CHECK TYRE PRESSURE AND LOCKING OF WHEEL NUTS in part: 3 - MAINTENANCE).
- Turn the reverse gear to neutral and apply the parking brake.

CALCULATING THE HEIGHT OF THE LOW BEAM LIGHTS (h2)

h1 = Height of low beam light with respect to the ground.
h2 = Height of adjusted beam.
l = Distance between low beam lights and the white wall.

h2 = h1 - (l x 2/100)



G5

G 6 - AIR CONDITIONING

Change the gas if the air is not as cool as required:

- use 1 kg of “134 FREON”.
- in case of leakage or parts replacements, change the oil using 60 g of special oil for Air Conditioning compressor.

INTRODUCTION TO SAFETY

4 - ELECTRIC AND HYDRAULIC SYSTEM

INTRODUCTION TO SAFETY

ELECTRIC SYSTEM

STARTER MOTOR

The starter motor is fitted to the left of the engine and it needs no maintenance apart from cleaning and tightening of the terminals.
Contact your agent or dealer if the starter motor does not work correctly.

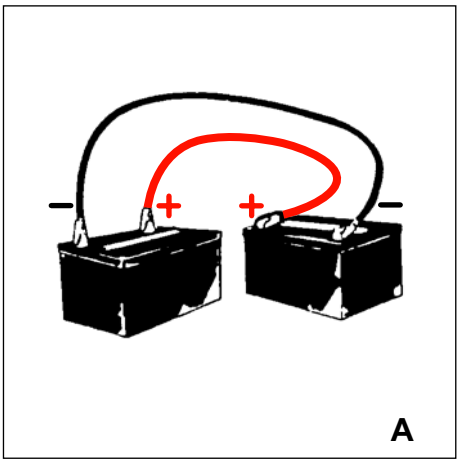
ALTERNATOR

The alternator is mounted on the left of the engine. The alternator and the regulator are designed to function in a system polarized in one direction only, it is therefore necessary to take the following precautions while working on the battery charge circuit as it can otherwise cause serious damage to the electrical equipment:

Do not activate the alternator with the circuit open, but make sure all the terminals are tightened.
Do not dismantle the terminals on the back of the alternator with the combustion engine running, as it can otherwise damage the alternator.
When installing a battery, make sure the connections are polarized correctly. The wire marked (+) must be connected to the positive terminal (+) of the battery and the wire marked (-) must be connected to the negative terminal (-) of the battery, and it must be earthed.

If a second battery is used to start up the combustion engine, always connect terminals having the same polarity (Fig. A). Mount a battery having the same voltage as that on the truck.
If an outside charger is used, always connect the (+) wire of the charger to the (+) terminal of the battery and the (-) wire of the charger to the (-) terminal of the battery and earthing.
Never short circuit the alternator terminals or earth them.

Never invert the alternator connections on the battery.
Never dismantle or change an electric connection with the engine running.
In case of electric welding on the truck, connect the negative cable of the welder directly to the part to be welded to prevent high voltage current from passing through the alternator and then disconnect the battery.



A

LIGHTING

A fused bulb must be replaced immediately.
Never handle a new bulb with bare or dirty hands, since traces of grease, oil or sweat will evaporate when the bulb is heated and thus stain the reflector.
Never touch or try to polish the reflector. Open the headlight only to change the bulb.

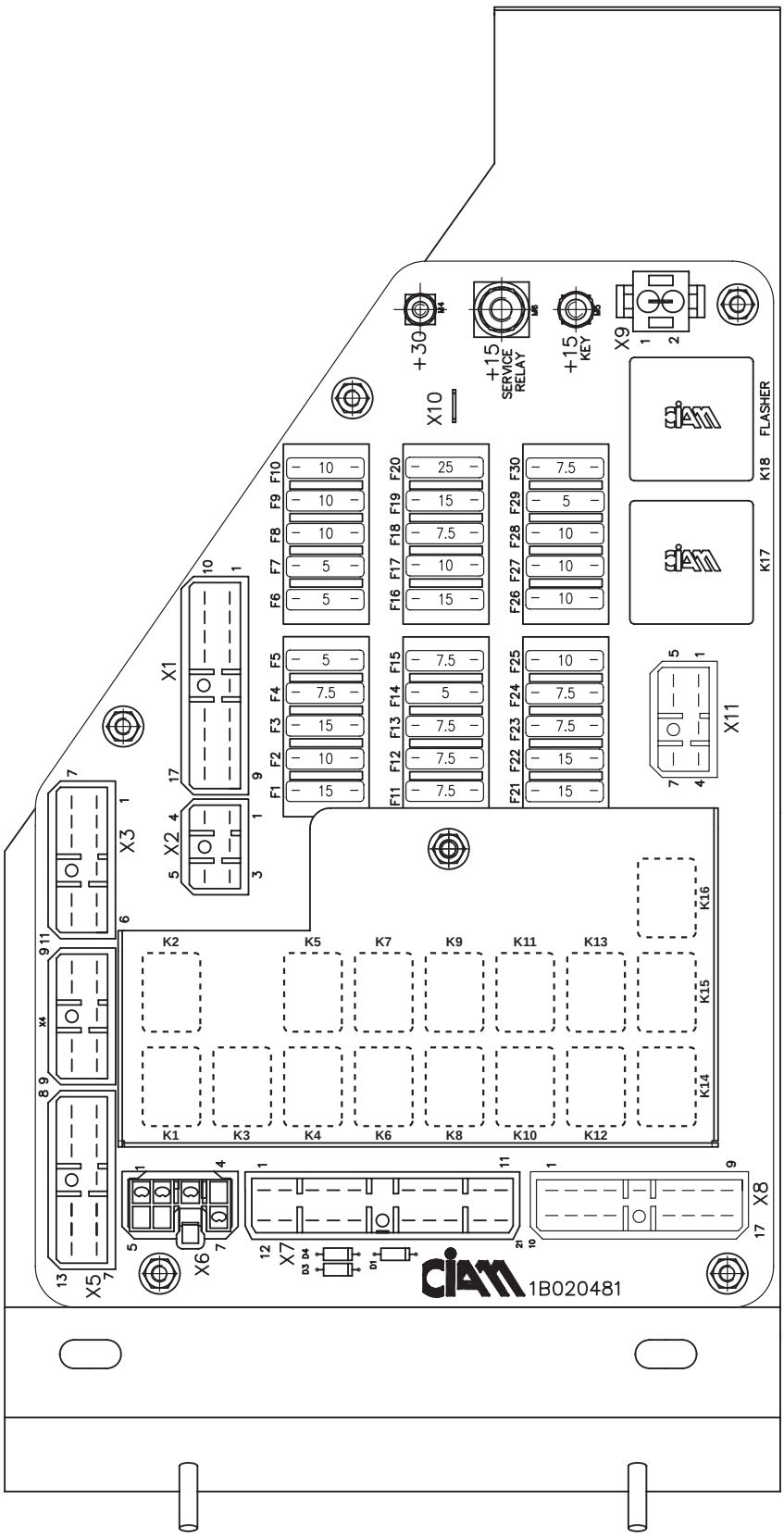
BATTERY

The battery efficiency is proportional to the reduction in temperature and finally ceases at -40°F.
Never try to use the starter motor if the battery is exposed to a temperature
around -20°F.
In such cases, heat the battery by immersing it in warm water, to a level of 2 in. below the covers.
In case of very low temperatures, remove the battery from the truck and store it in a warm place until it is used.

FUSE HOLDER AND RELAYS BOARD

The truck is provided with a fuse holder and relays board (Fig. B) which protects the electric circuit.
This fuse holder and relays board is screwed on a base plate in the cab, under the dashboard.
To change a fuse, remove and replace with a new fuse having the same quality and calibration.
In case of a power failure, check all the fuses and see if there has been a short circuit.

Never attempt to repair a blown fuse.



MANITOU

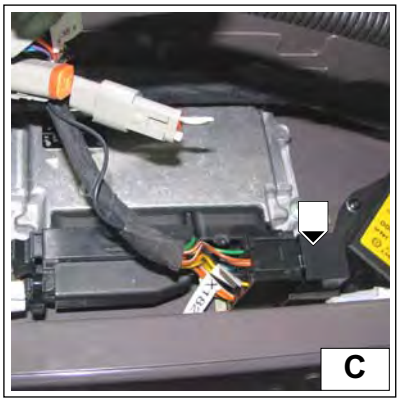
SCATOLA FUSIBILI E RELE'
MHT 860 L - 950 L

FUSE-BLOCK AND RELAY BOARD

Code	Sheet	Function
F1	8.1	15A fuse: main beams
F2	4.4	10A fuse: sensors power supply
F3	7.3	15A fuse: work lights
F4	7.3	7.5A fuse: rotary beacon switch power supply
F5	8.3	5A fuse: RH position light
F6	8.3	5A fuse: LH position light
F7	6.2	5A fuse: RC2 diagnostics power supply
F8	8.4	10A fuse: light switch power supply
F9	8.5	10A fuse: warning
F10	7.3	10A fuse: ceiling light
F11	7.3	7.5A fuse: front windscreen wiper switch
F12	7.2	7.5A fuse: rear windscreen wiper switch
F13	7.2	7.5A fuse: seat compressor power supply
F14	8.4	5A fuse: indicator lights and instruments
F15	8.5	7.5A fuse: stop micro switch
F16	6.3	10A fuse: optional power supply
F17	6.3	10A fuse: bucket switch power supply
F18	8.5	7.5A fuse: warning
F19	6.3	15A fuse: boom work lights switch
F20	7.1	25A fuse: heating
F21	8.1	15A fuse: dipped beams
F22	8.2	15A fuse: buzzer
F23	4.2	7.5A fuse: operating mode switch power supply
F24	5.4	7.5A fuse: anti-tilting device
F25	3.1	10A fuse: operation micro switch power supply
F26	3.3	10A fuse: emergency mushroom-shaped button
F27	7.2	10A fuse: air conditioning
F28	6.2	10A fuse: ARB control unit power supply
F29	2.5	5A fuse: optional
F30	6.2	7.5A fuse: RC2 control unit power supply
K1	4.4	Relay with diode
K2	7.2	Air conditioning relay
K3	4.5	Relay with diode
K4	3.3	Running enable relay
K5	8.1	Main beams relay
K6	3.2	Reverse movement relay
K7	3.2	Forwards movement relay
K8	5.3	Anti-tilting relay
K9	8.2	Buzzer relay
K10	5.4	ARB forcing key power supply relay
K11	8.2	Dipped beams relay
K12	3.4	Neutral position relay
K13	8.5	Trailer brake relay
K14	8.3	Stop micro switch relay
K15	4.3	Speed change relay
K16	5.3	Sagelet relay
K17	4.2	Working mode control unit relay
K18	8.4	Warning relay

RELAY AND DIODES UNDER CIGARETTE LIGHTER

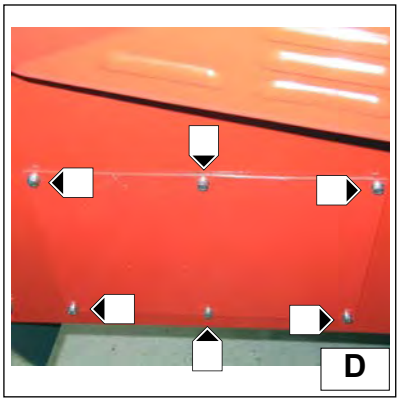
Code	Sheet	Function
K181	7.5	Air conditioner enable relay
K182	7.4	Diodes

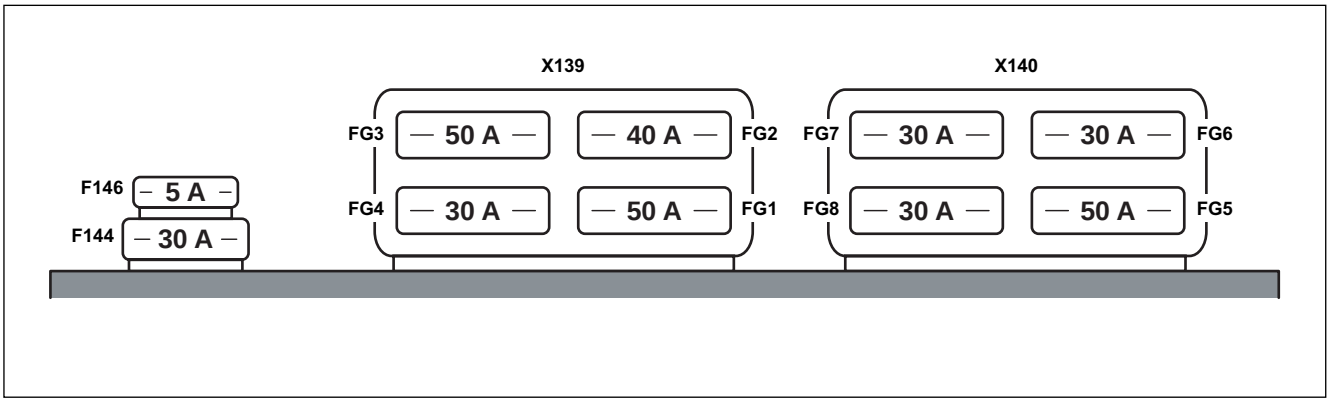


FUSES AND RELAY IN ENGINE COMPARTMENT

To access the fuses and relays placed in the engine compartment, slacken the six screws (spanner 10 mm) (Fig. D) and remove the plate (Fig. E).

Code	Sheet	Function
F144	1.3	30A fuse: Perkins power
F146	1.3	5A fuse: ignition input
FG1	1.1	50A fuse: electric fan relay
FG2	1.1	40A fuse: spark plugs relay
FG3	1.1	50A fuse: electro-mechanical control unit
FG4	1.1	30A fuse: start-up panel relay
FG5	1.1	50A fuse: services relay
FG6	1.1	30A fuse: heating
FG7	1.2	30A fuse: optional power supply
FG8	1.2	30A fuse: start-up panel relay
K142	1.2	Start-up relay
K143	1.3	Perkins control unit power supply relay
K145	1.3	Electric fans relay
K147	1.5	Preheating relay
K148	1.4	Services relay





USERS LEGEND
ELECTRICAL SYSTEM
MHT 860 L - 950 L

Code	Sheet	Function
A30	5.1	Sagelec control unit
A86	2.1	Indicators check control unit
A141	1.4	Perkins control unit
A201	2.3	Accelerator pedal
A205	9.4	Machine functions control unit
A207	7.3	Car radio
A210	6.3	ARB control unit
A280	6.5	OBD diagnostics socket
A365	6.2	Rexroth diagnosis
A367	6.1	RC2 control unit
B39	3.3	Gear reset micro switch
B105	8.2	Buzzer
B106	4.4	Rear axle alignment sensor
B112	4.3	Front axle alignment sensor
B124	3.2	Parking brake pressure switch
B154	1.2	Air filter clogged
B197	4.1	Stop pedal pressure switch
B214	5.3	Boom retracted micro switch
B215	5.3	Boom lowered micro switch
B236	1.3	Fuel level indicator
B238	5.3	Three metres micro switch
B281	2.3	Steering fault pressure switch
E101	8.2	RH front light
E116	8.5	RH rear light
E119	8.3	LH rear light
E123	8.2	RH front side light
E194	8.1	LH front light
F1	8.1	15A fuse : main beams
F2	4.4	10A fuse: sensors power supply
F3	7.3	15A fuse: work lights
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F24	5.4	.7.5A fuse: anti-tilting device
F25	3.1	10A fuse: operation micro switch power supply
F26	3.3	10A fuse: mushroom-shaped emergency pushbutton
F27	7.2	10A fuse: air conditioning
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F29	2.5	5A fuse: optional
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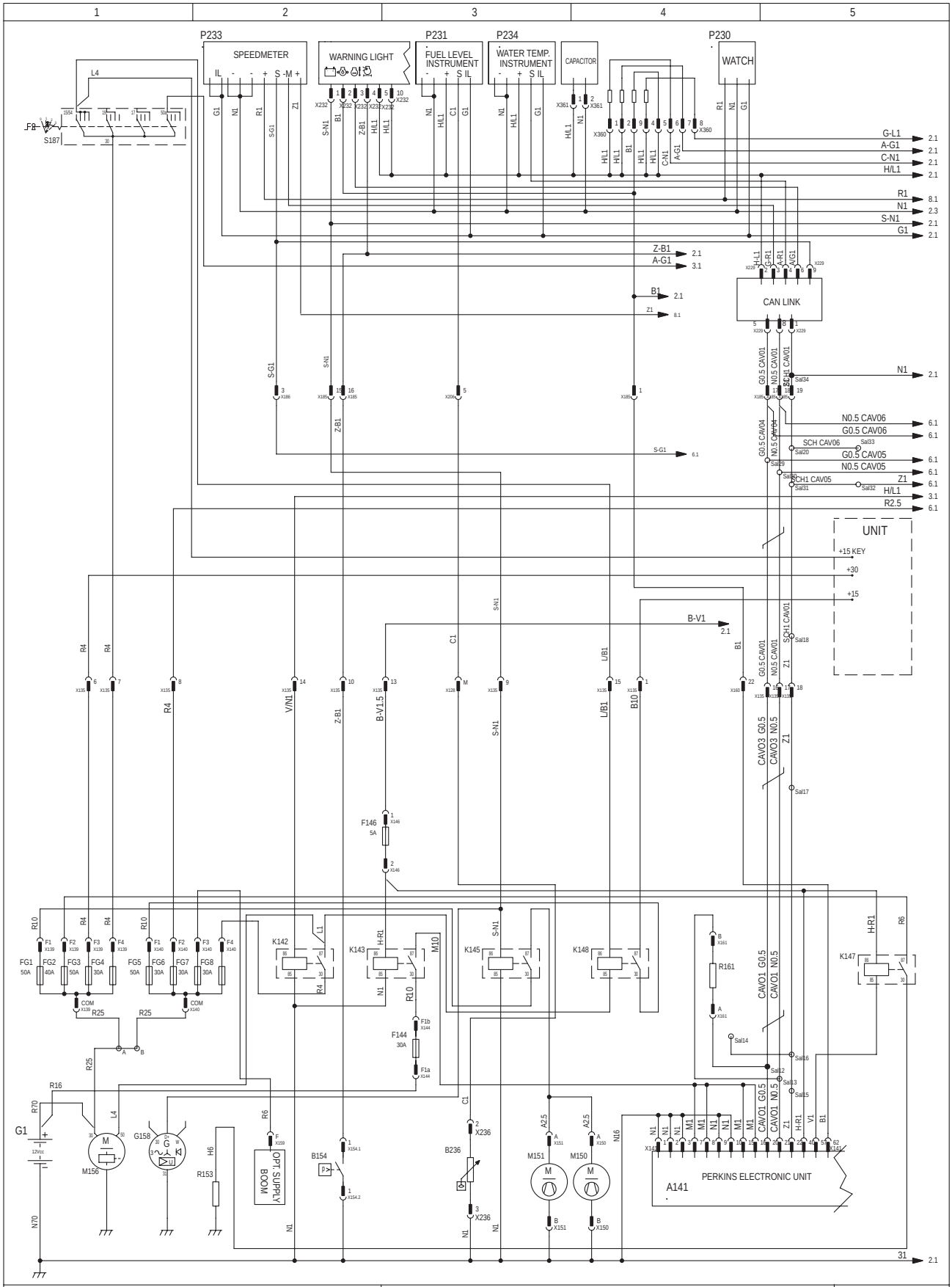
FG2	1.1	40A fuse: spark plugs relay
FG3	1.1	50A fuse: electro-mechanical control unit
FG4	1.1	30A fuse: start-up panel relay
FG5	1.1	50A fuse: services relay
FG6	1.1	30A fuse: heating
FG7	1.2	30A fuse: optional power supply
FG8	1.2	30A fuse: start-up panel relay
G1	1.1	Battery
G158	1.1	Alternator
H108	8.2	RH front side light
H120	8.4	Reversal Buzzer
H127	8.4	License plate light
H129	8.4	LH rear side light
H130	8.5	RH rear side light
H178	7.5	Cigarette lighter socket / 12 V power socket
H198	2.3	Brakes fluid pressure low indicator
H214	4.3	Slow speed indicator
H215	4.3	Fast speed indicator
H218	4.3	Rear axle alignment indicator
H219	4.3	Front axle alignment indicator
H223	2.4	Concentric steering indicator
H224	2.4	Crab steering indicator
H225	10.1	Trailer brake indicator
H226	9.3	Fans inversion indicator
H229	2.4	Road steering indicator
H310	5.4	Safety devices forced Buzzer
HA4	7.3	LH rear loudspeaker
HA5	7.3	RH rear loudspeaker
J1	/	Sagelec control unit connector
J2	/	Sagelec control unit connector
J3	/	Sagelec control unit connector
K1	4.4	Relay with diode
K2	7.2	Air conditioning relay
K3	4.5	Relay with diode
K4	3.3	Running enable relay
K5	8.1	Main beams relay
K6	3.2	Reverse movement relay
K7	3.2	Forwards movement relay
K8	5.3	Anti-tilting relay
K9	8.2	Buzzer relay
K10	5.4	ARB forcing key power supply relay
K11	8.2	Dipped beams relay
K12	3.4	Neutral position relay
K13	8.5	Trailer brake relay
K14	8.3	Stop micro switch relay
K15	4.3	Speed change relay
K16	5.3	Sagelet relay
K17	4.2	Working mode control unit relay
K18	8.4	Warning relay
K142	1.2	Start-up relay
K143	1.3	Perkins control unit power supply relay
K145	1.3	Electric fans relay
K147	1.5	Preheating relay
K148	1.4	Services relay
K181	7.5	Air conditioner enable relay
K182	7.4	Diodes
M27	7.2	A/C Compressor
M59	7.4	Front windshield wiper
M72	7.3	Seat compressor

M130	7.2	Air conditioner Optional
M150	1.4	Intercooler 1 electric fan
M151	1.3	Intercooler 2 electric fan
M156	1.1	Engine start-up
M196	7.5	Windshield wiper pump
M237	6.2	Fuel pump
P175	7.4	Heating panel
P230	1.4	Clock
P231	1.3	Fuel level instrument
P233	1.2	Rev counter
P234	1.3	Engine water temperature instrument
R153	1.2	Ignition plug
R161	1.4	Can-bus resistance
R484	2.1	47 OHM Resistance
S74	7.1	Heating
S107	8.3	Stop micro switch
S166	5.4	Opt exclusion switch
S167	3.1	Steering column switch
S168	3.4	Mushroom-shaped emergency push-button
S169	3.4	Mushroom-shaped emergency push-button
S170	9.5	ARB forcing key
S172	9.5	Seat micro switch
S187	1.1	Start-up panel
S204	7.5	Air conditioning switch
S208	5.5	Boom movements enable switch
S209	6.3	Shovel function switch
S211	6.4	Mixer bucket switch
S212	6.5	2° and 3° output switch
S213	4.2	Cylinder capacity change switch
S216	4.4	Speed change switch
S217	3.2	Gear reset switch
S220	3.3	Parking brake switch
S221	8.1	Rear fog light switch
S222	2.3	Steering switch
S227	9.3	Fans inversion switch
S235	8.4	Warning switch
S237	10.4	Levelling switch
S364	5.3	Capacity regulation pushbutton
S366	5.3	Manipulator
S483	3.4	Pushbutton for cutting hydraulic movements
X1	/	Fuses relay control unit connector
X2	/	Fuses relay control unit connector
X3	/	Fuses relay control unit connector
X4	/	Fuses relay control unit connector
X5	/	Fuses relay control unit connector
X6	/	Fuses relay control unit connector
X7	/	Fuses relay control unit connector
X8	/	Fuses relay control unit connector
X9	/	Fuses relay control unit connector
X10	/	Fuses relay control unit connector
X11	/	Fuses relay control unit connector
X117	/	Fan inversion connector
X118	/	Trailer socket connector
X121	/	Driving seat line interface chassis line connector
X126	/	Trailer brake kit connector
X128	/	Driving seat line interface chassis connector
X135	/	Driving seat interface engine line connector
X141	/	Perkins control unit connector
X152	/	Electric fan inversion kit connector
X160	/	Driving seat interface engine connector
X161	/	Can-bus resistance connector
X162	/	Boom line connector
X163	/	Optional power supply connector
X164	/	Cab roof line connector
X165	/	Cab roof line connector
X167.1	/	Manipulator connector
X167.2	/	Manipulator connector
X167.3	/	Manipulator connector
X174	/	Heating unit connector
X175	/	Heating panel connector
X176	/	Heating panel connector
X177	/	Heating panel connector
X178	7.5	Cigarette lighter socket /12 V current socket connector
X180	/	Air conditioner optional connector
X182	7.4	Diodes connector
X185	/	Driving seat line interface dashboard line connector
X186	/	Driving seat line interface dashboard line connector
X191	/	Light switch-arrows connector
X192	/	Gear switch connector
X193	/	Switch connector
X199	/	Fans inversion optional connector
X201	/	Accelerator pedal connector
X206	/	Driving seat line interface dashboard line connector
X228	/	Indicator check control unit connector
X229	/	Can link connector
X232	/	Indicators connector
X256.p	/	Basket provision connector
X256.s	/	Basket provision by-pass connector
X280	/	OBD diagnosis socket connector
X360	/	Resistances connector
X361	/	Condenser connector
X365	/	Rexroth diagnosis connector
X367	/	RC2 control unit connector
Y103	9.3	Solenoid valve DA2
Y104	4.1	2° cylinder capacity solenoid valve
Y109	10.3	RH levelling solenoid valve
Y110	10.4	LH levelling solenoid valve
Y111	3.3	Parking brake solenoid valve
Y125	9.3	Controls block solenoid valve
Y131	2.1	Concentric steering solenoid valve
Y132	2.1	Crab steering solenoid valve
Y133	4.2	Slow speed solenoid valve
Y134	4.3	Fast speed solenoid valve
Y136	3.1	Forwards solenoid valve
Y137	3.1	Reverse solenoid valve
Y239	5.2	ARB solenoid valve
Y367	5.1	Extension/retraction proportional solenoid valve
Y368	5.2	Optional proportional solenoid valve

COLOUR OF WIRES

A : BLUE	H : GREY	R : RED
B : WHITE	L : DARK BLUE	S : PINK
C : ORANGE	M : BROWN	V : GREEN
G : YELLOW	N : BLACK	Z : VIOLET

Note: the colour of double colour wires is indicated by the composition of the codes indicated above, for example:
G/V = YELLOW/GREEN (transverse colouring)
G-V = YELLOW/GREEN (longitudinal colouring)



MANITOU

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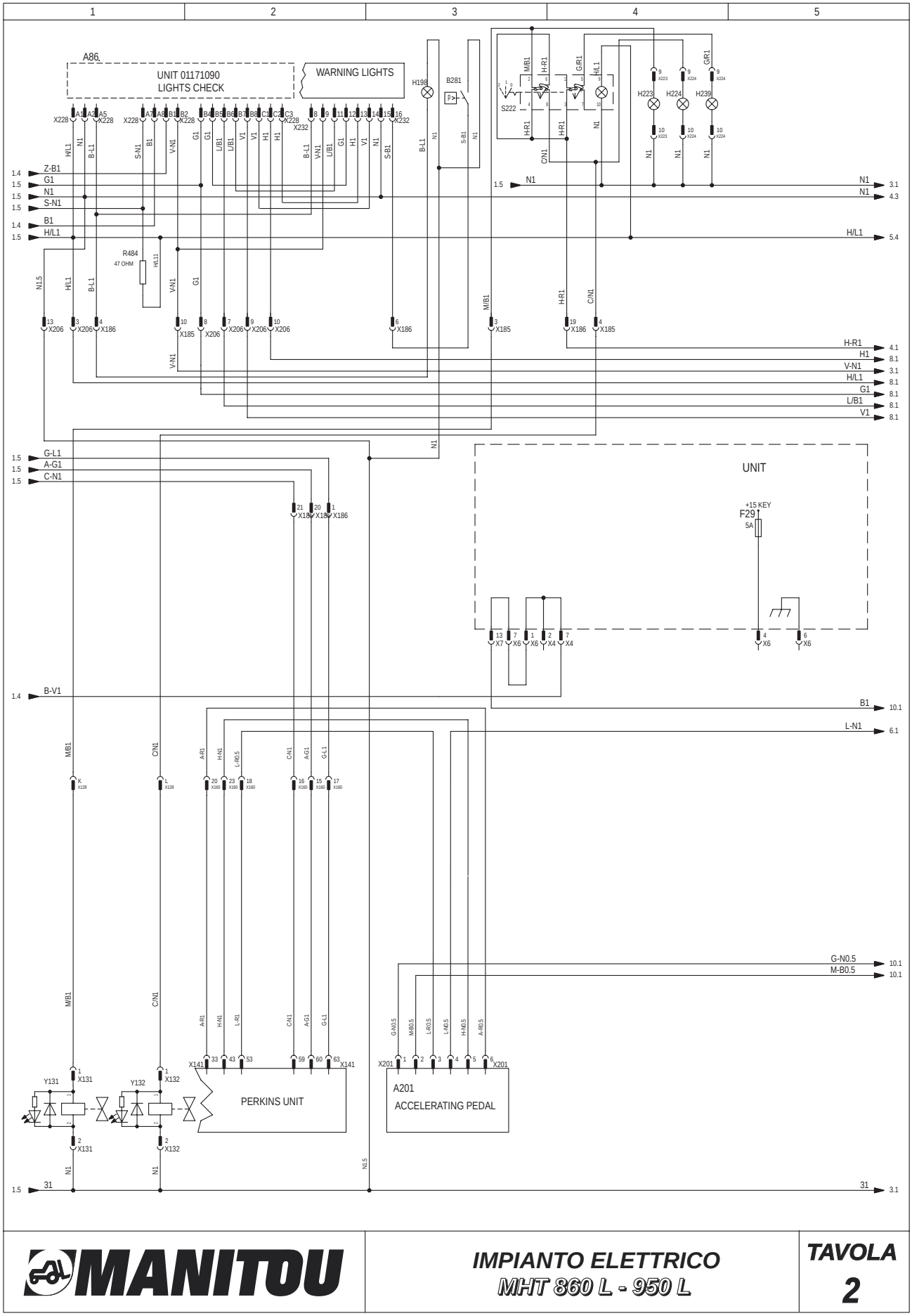
MHT 860 L - 950 L

TAVOLA
1



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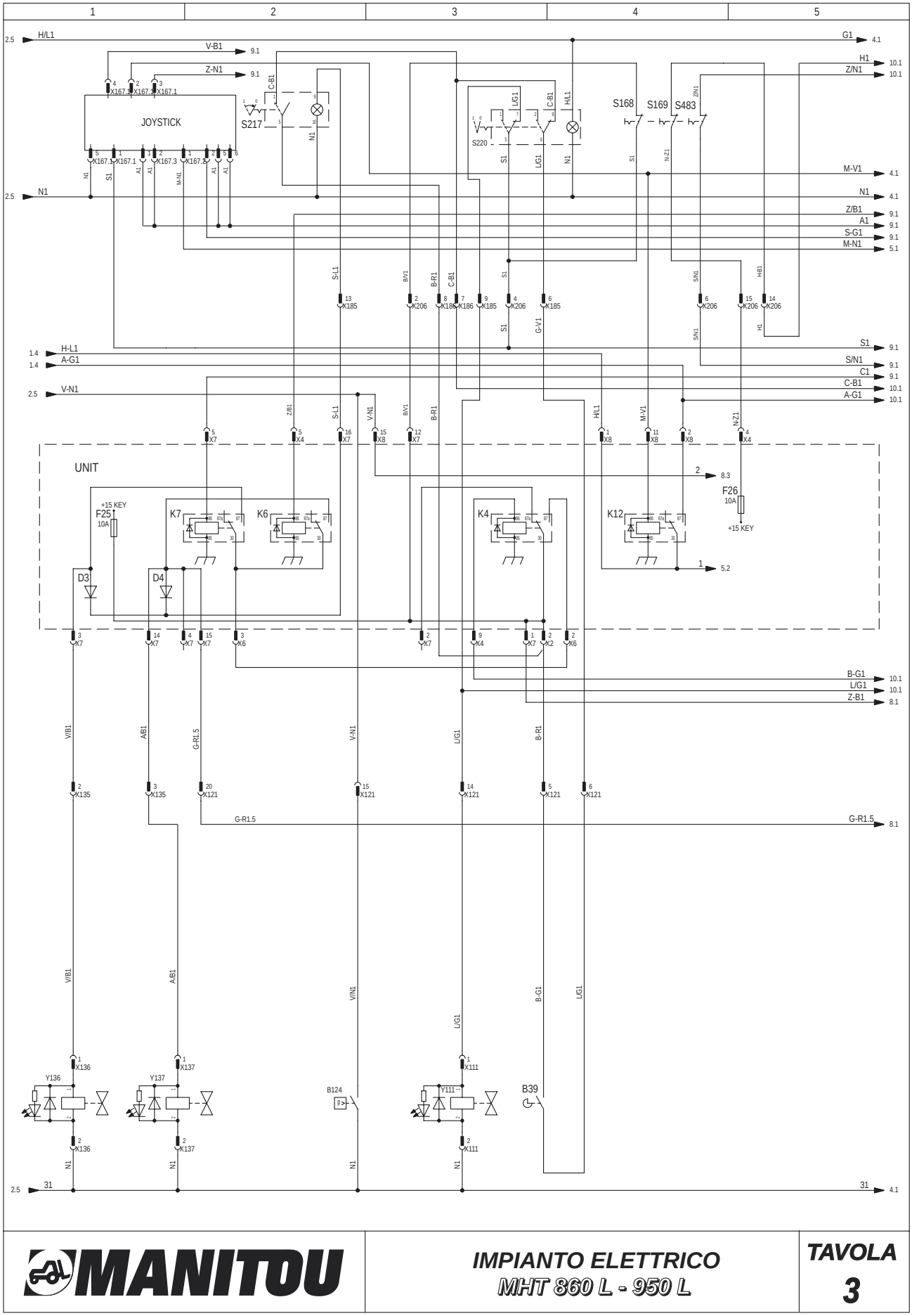
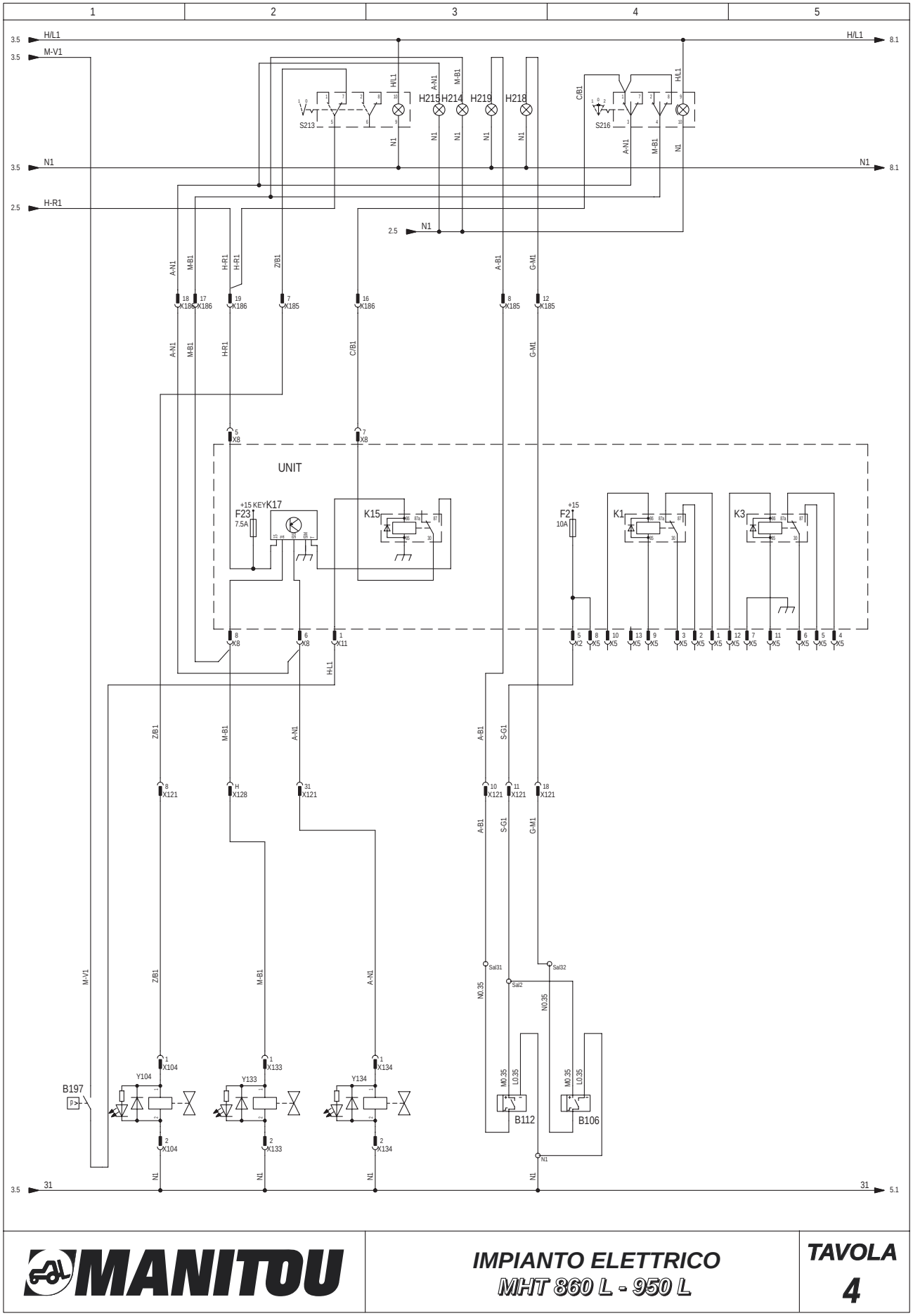
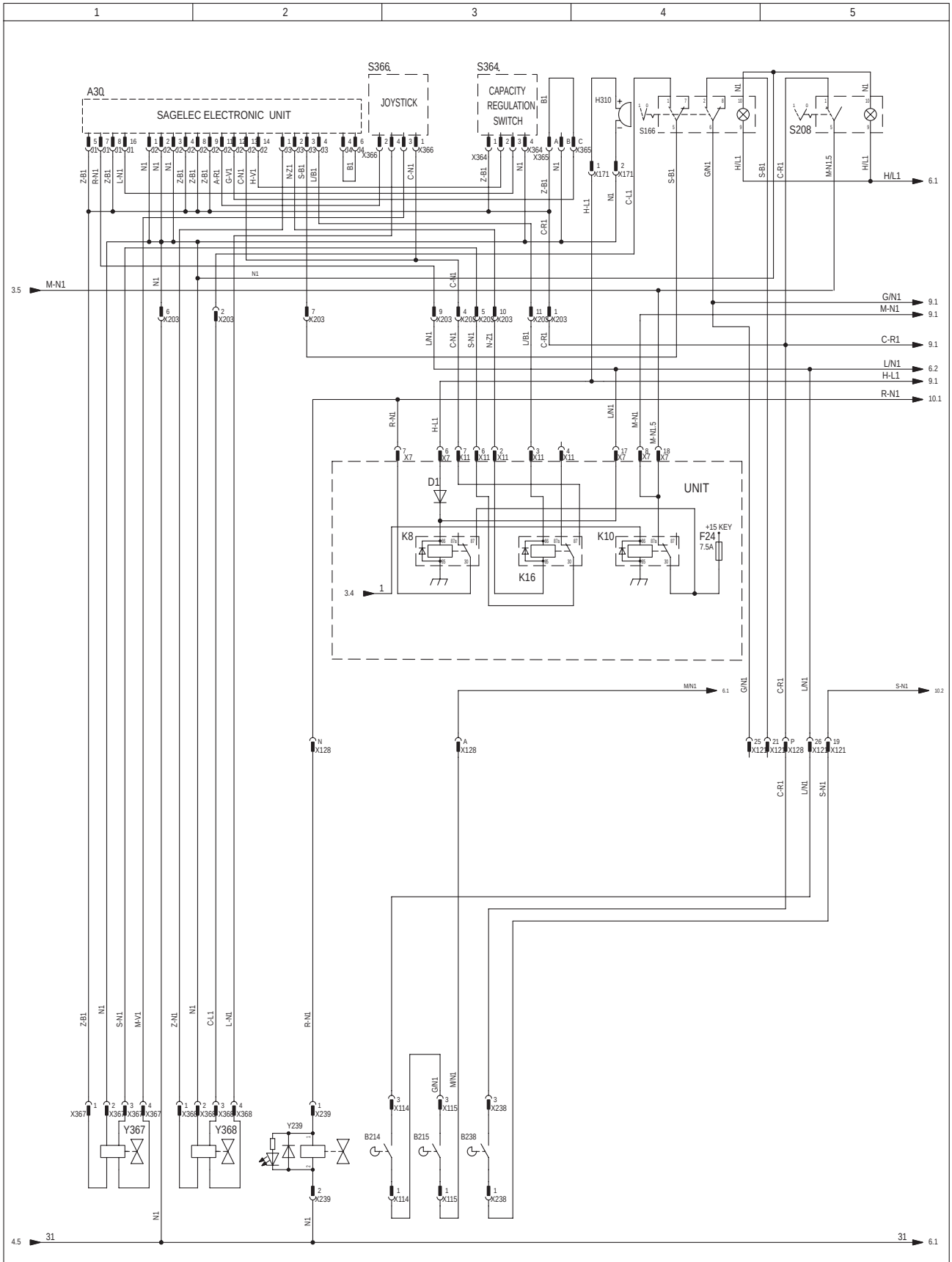
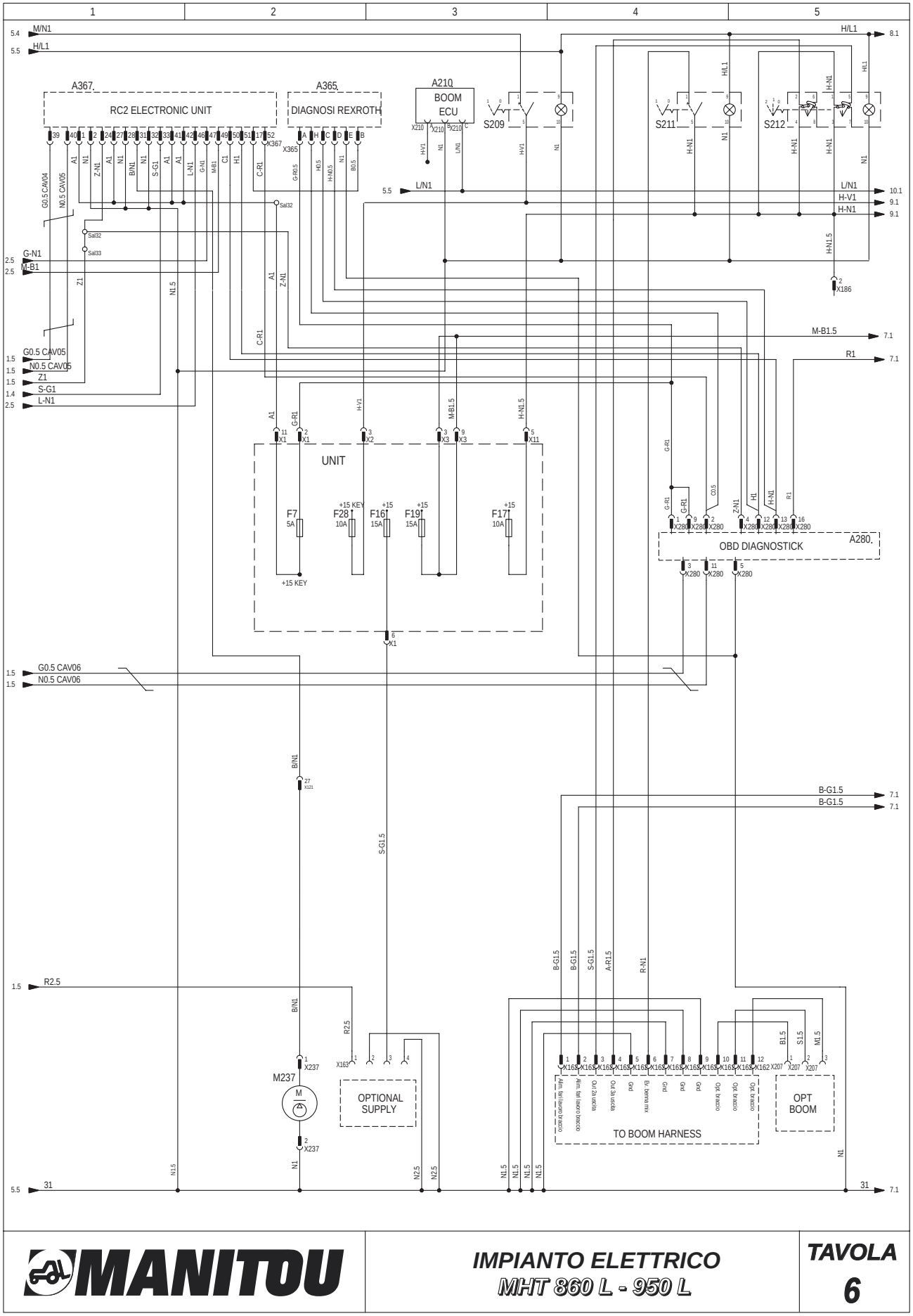
IMPIANTO ELETTRICO
MHT 860 L - 950 L

TAVOLA
2


1
2
3
4
5
JOYSTICK
S217
S220
S168
S169
S483
UNIT
K7
K6
K4
K12
F25
10A
+15 KEY
F26
10A
+15 KEY
D3
D4
Y136
Y137
Y111
B124
B39
H/L1
V-B1
Z-N1
G1
H1
Z/N1
M-V1
N1
Z/B1
A1
S-G1
M-N1
H-L1
A-G1
V-N1
S1
S/N1
C1
C-B1
A-G1
B-G1
L/G1
Z-B1
G-R1.5
31


1
2
3
4
5
H/L1
M-V1
N1
H-R1
S213
S216
H215
H214
H219
H218
UNIT
+15 KEY
F23
7.5A
K17
K15
+15
F21
10A
K1
K3
B197
Y104
Y133
Y134
B112
B106
31


1
2
3
4
5
A30
SAGELEC ELECTRONIC UNIT
S366
JOYSTICK
S364
CAPACITY
REGULATION
SWITCH
H310
S166
S208
UNIT
D1
K8
K10
K16
F24
+15 KEY
7.5A
Y367
Y368
Y239
B214
B215
B238
M-N1
G/N1
C-R1
L/N1
H-L1
R-N1
S-N1
31


A367.
RC2 ELECTRONIC UNIT
A365.
DIAGNOSI REXROTH
A210.
BOOM ECU
S209
S211
S212
UNIT
F7 5A
F28 10A
F16 15A
F19 15A
F17 10A
+15 KEY
A280.
OBD DIAGNOSTICK
M237
OPTIONAL SUPPLY
TO BOOM HARNESS
OPT BOOM
M/N1
H/L1
L/N1
H-V1
H-N1
M-B1.5
R1
G0.5 CAV05
N0.5 CAV05
Z1
S-G1
L-N1
G0.5 CAV06
N0.5 CAV06
B/N1
B-G1.5
S-G1.5
R2.5
31

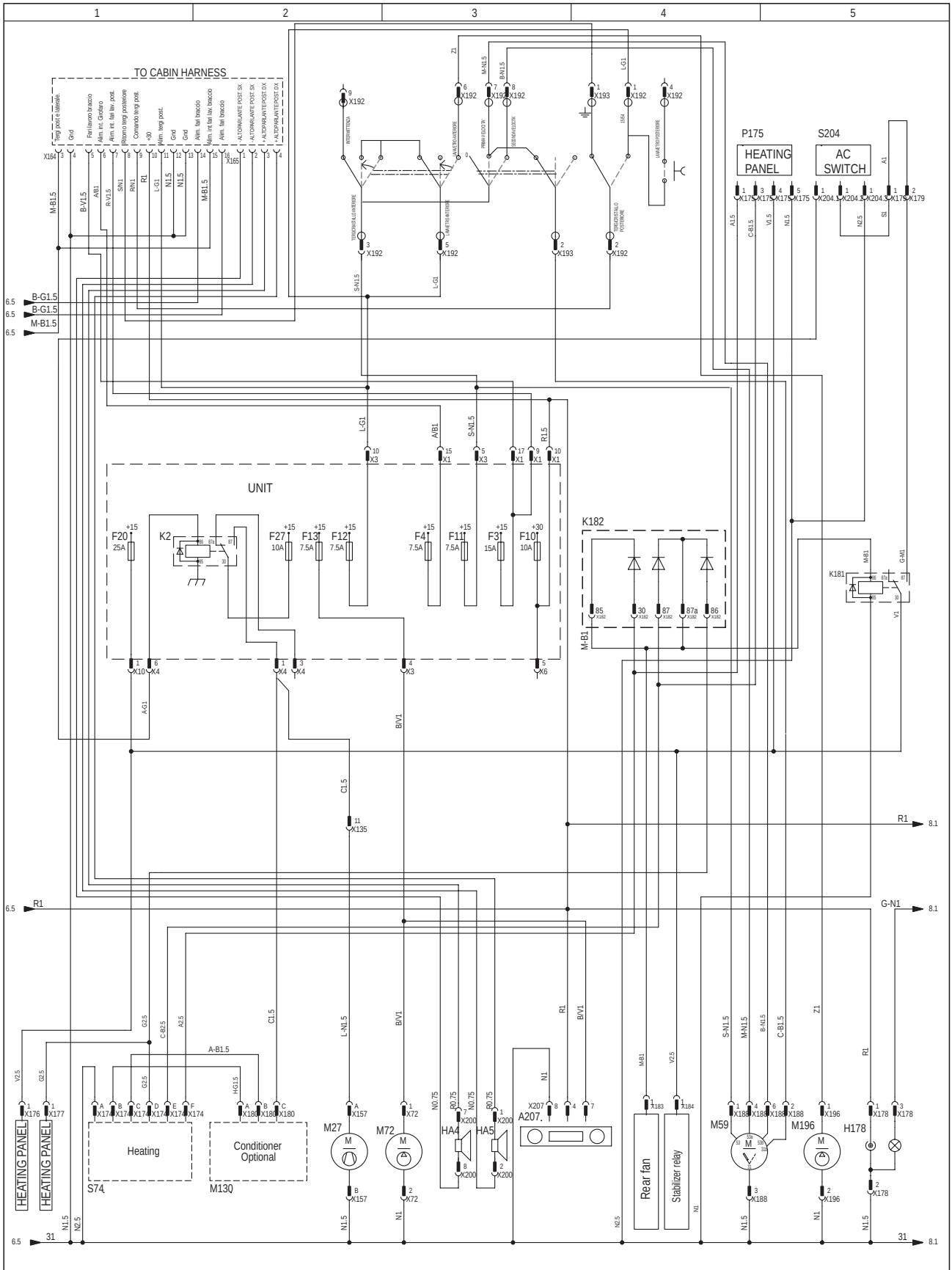


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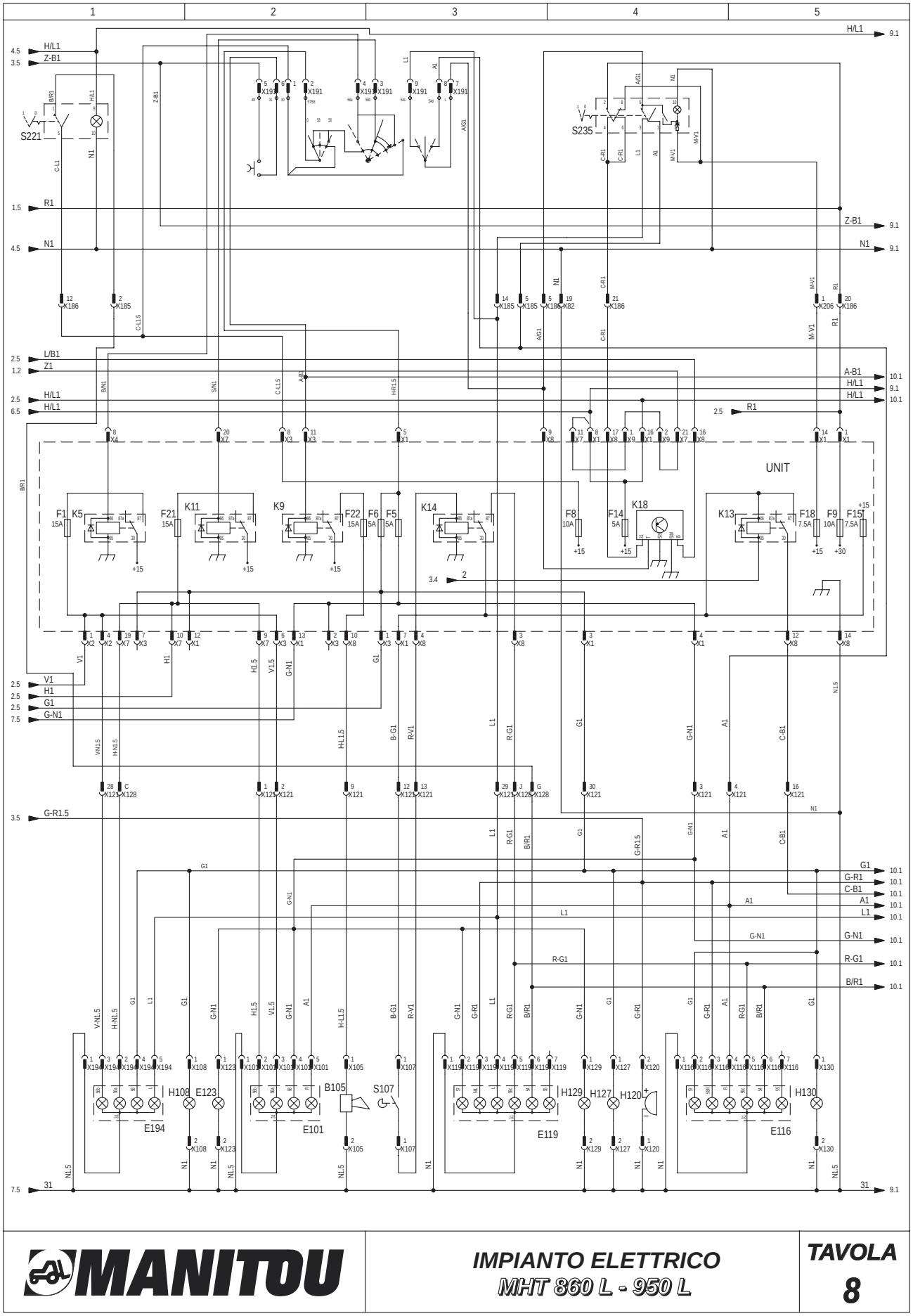
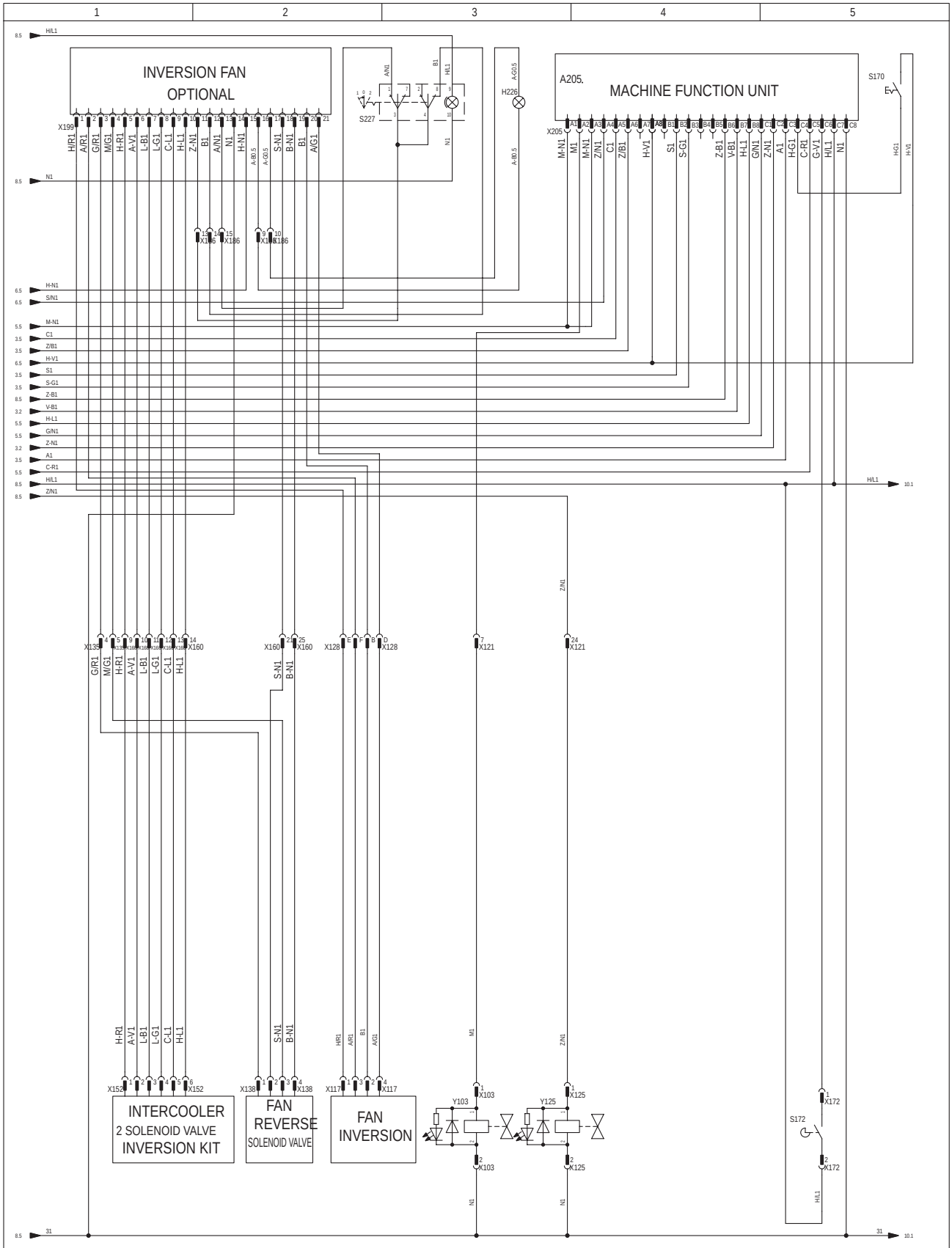
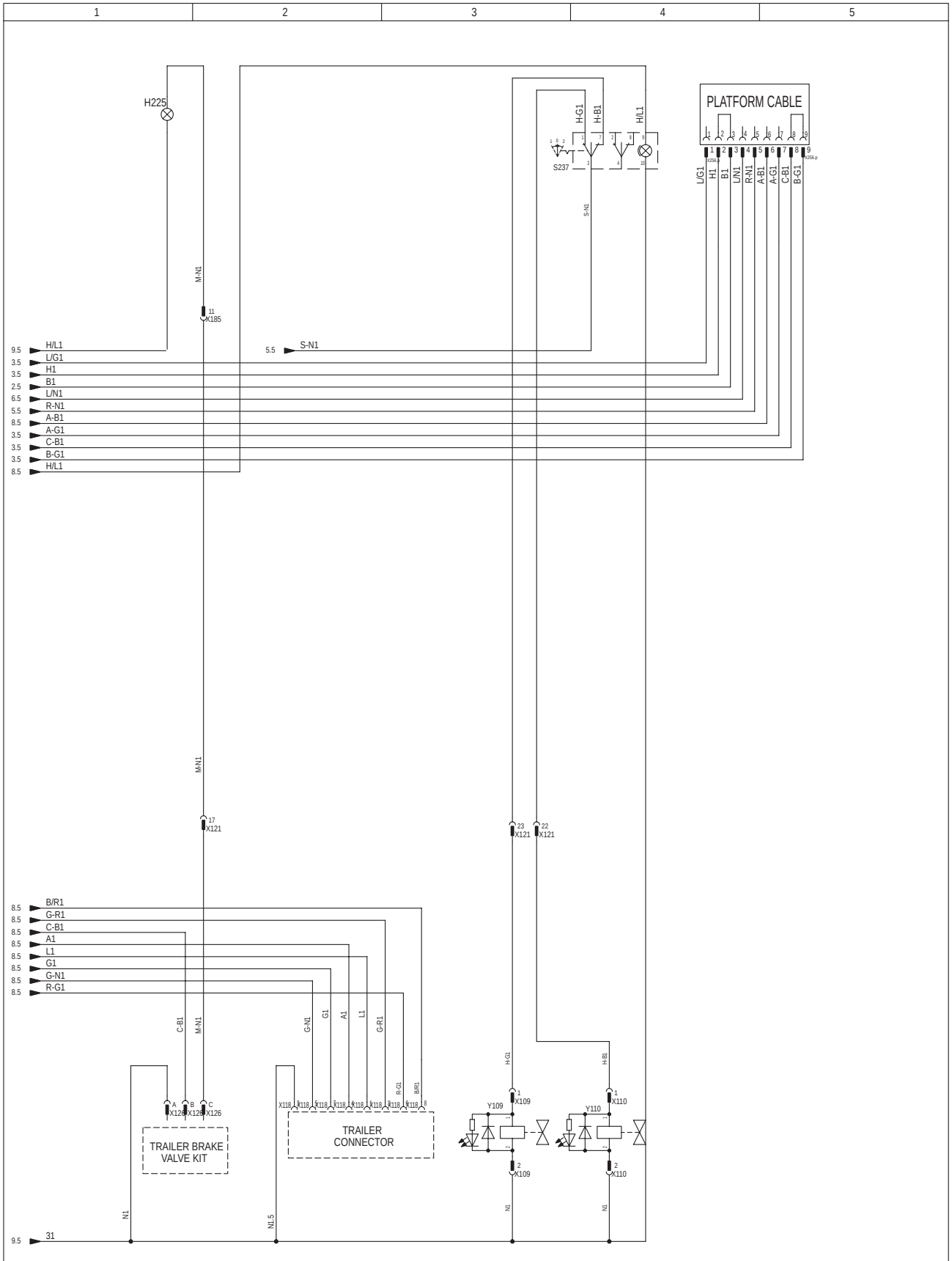
TAVOLA 7


1
2
3
4
5
UNIT
S221
S235
F1 15A
K5
F21 15A
K11
K9
F22 15A
F6 5A
F5 5A
K14
F8 10A
F14 5A
K18
K13
F18 7.5A
F9 10A
F15 7.5A
H108
E123
E194
B105
S107
E101
H129
H127
H120
E119
H130
E116
H/L1
Z-B1
N1
R1
L/B1
Z1
A-B1
V1
H1
G1
G-N1
G-R1.5
B/R1
C-B1
A1
L1
R-G1
31


INVERSION FAN
OPTIONAL
A205.
MACHINE FUNCTION UNIT
INTERCOOLER
2 SOLENOID VALVE
INVERSION KIT
FAN
REVERSE
SOLENOID VALVE
FAN
INVERSION



MANITOU

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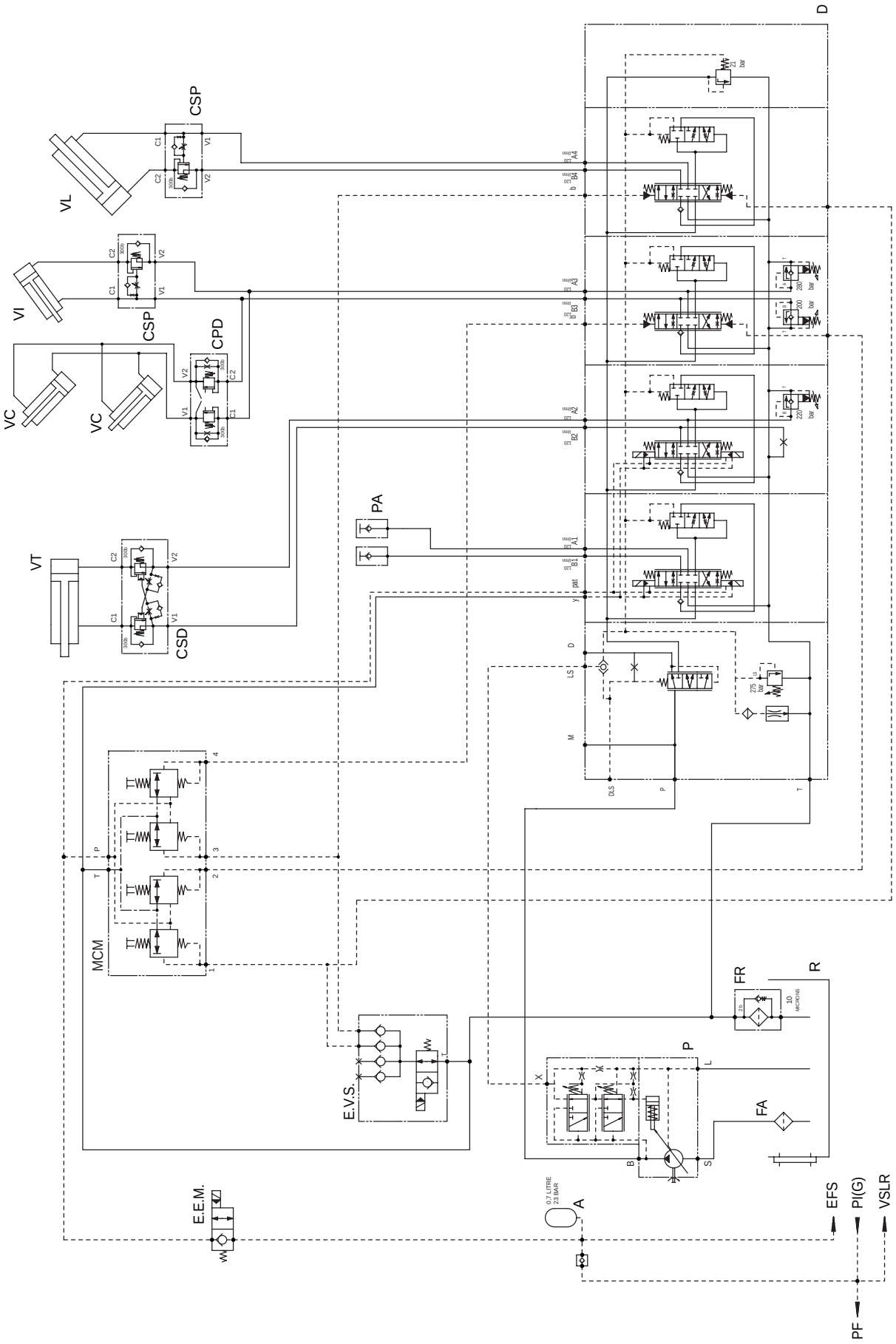
MHT 860 L - 950 L

TAVOLA
10

HYDRAULIC SYSTEM

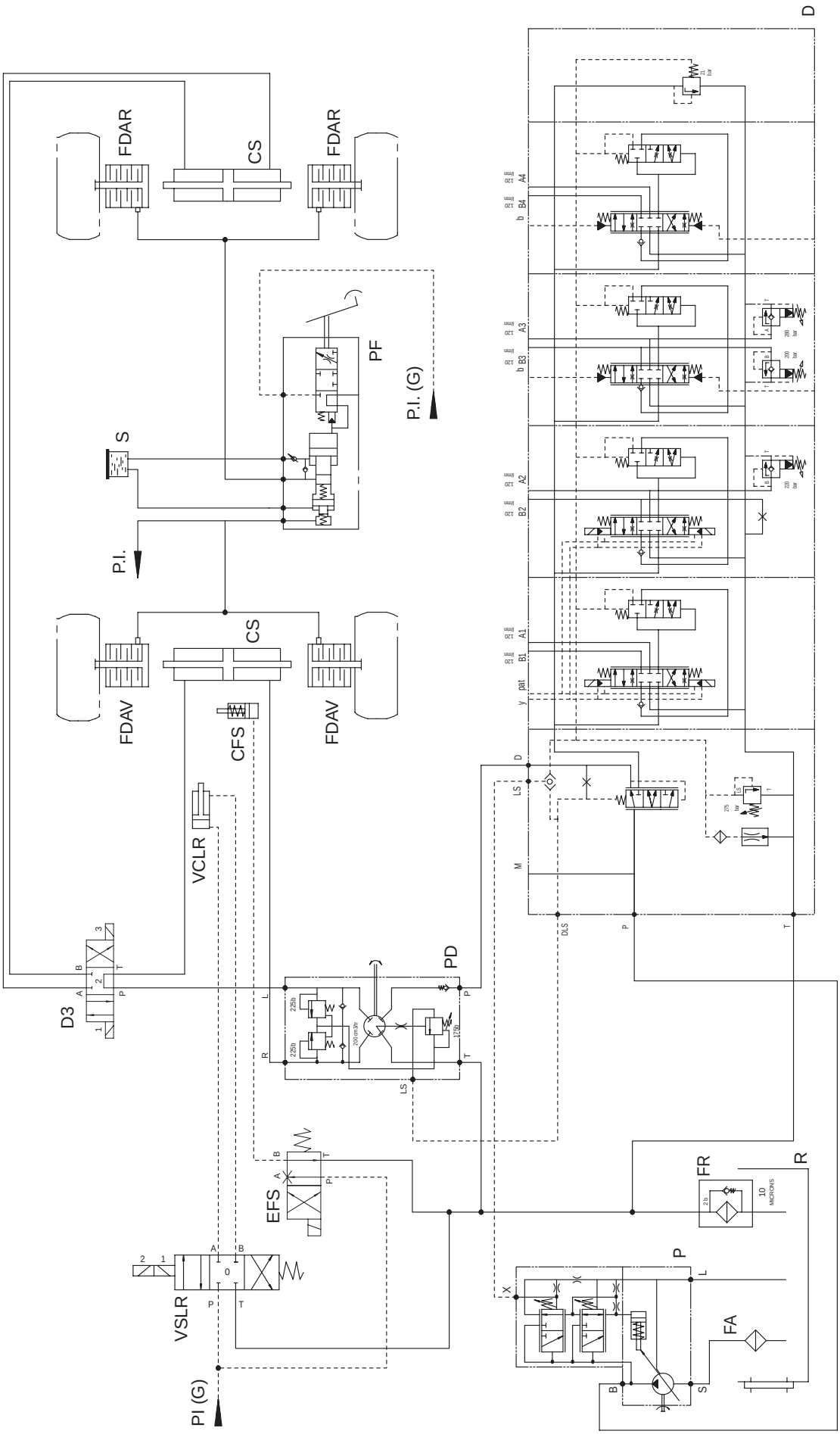
MOVEMENTS HYDRAULIC SYSTEM LAYOUT



LEGEND OF MOVEMENTS HYDRAULIC SYSTEM LAY-OUT

A	=	Accumulator
CPD	=	Relief and balancing valve
CSD	=	Double relief valve
CSD	=	Piloted relief valve
D	=	Distributor
EEM	=	Manipulator exclusion solenoid valve
EFS	=	Parking brake solenoid valve
EVS	=	Anti-tilting solenoid valve
F.A.	=	Intake filter
F.R.	=	Exhaust filter
MCM	=	Manipulator
P.	=	Gear pump
P.A.	=	Optional socket
P.F.	=	Brake pump
PI (G)	=	G connection of hydrostatic pump
R	=	Oil tank
VL	=	Lift cylinder
VI	=	Inclination cylinder
VC	=	Compensation cylinder
VSLR	=	Slow-fast selector valve
VT	=	Extension cylinder

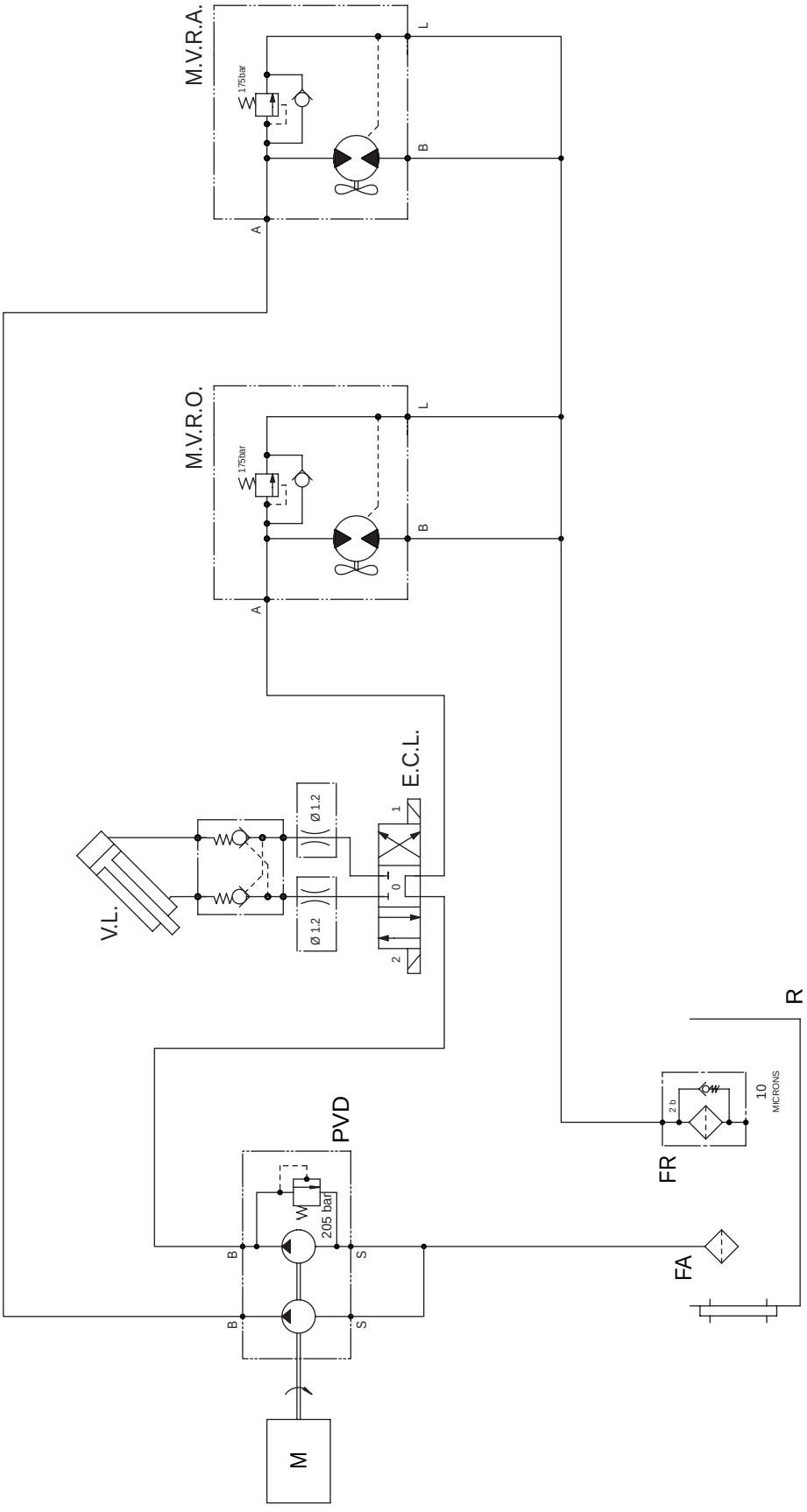
STEERING AND BRAKES HYDRAULIC SYSTEM LAYOUT



LEGEND - STEERING AND BRAKES HYDRAULIC SYSTEM LAYOUT

C.F.S.	=	Parking brake cylinder
C.S.	=	Steering cylinder
D	=	Distributor
D.3.	=	Steering distributor
EFS	=	Parking brake solenoid valve
F.A.	=	Intake filter
FDAR	=	Rear axle brake disks
FDAV	=	Front axle brake disks
F.R.	=	Exhaust filter
P.	=	Gear pump
P.D.	=	Hydraulic powered steering
P.F.	=	Brake pump
PI	=	Connection to hydrostatic pump
PI (G)	=	G connection of hydrostatic pump
R.	=	Oil tank
S.	=	Brake oil tank
VCLR	=	Slow-fast control cylinder
VSLR	=	Slow-fast selector valve

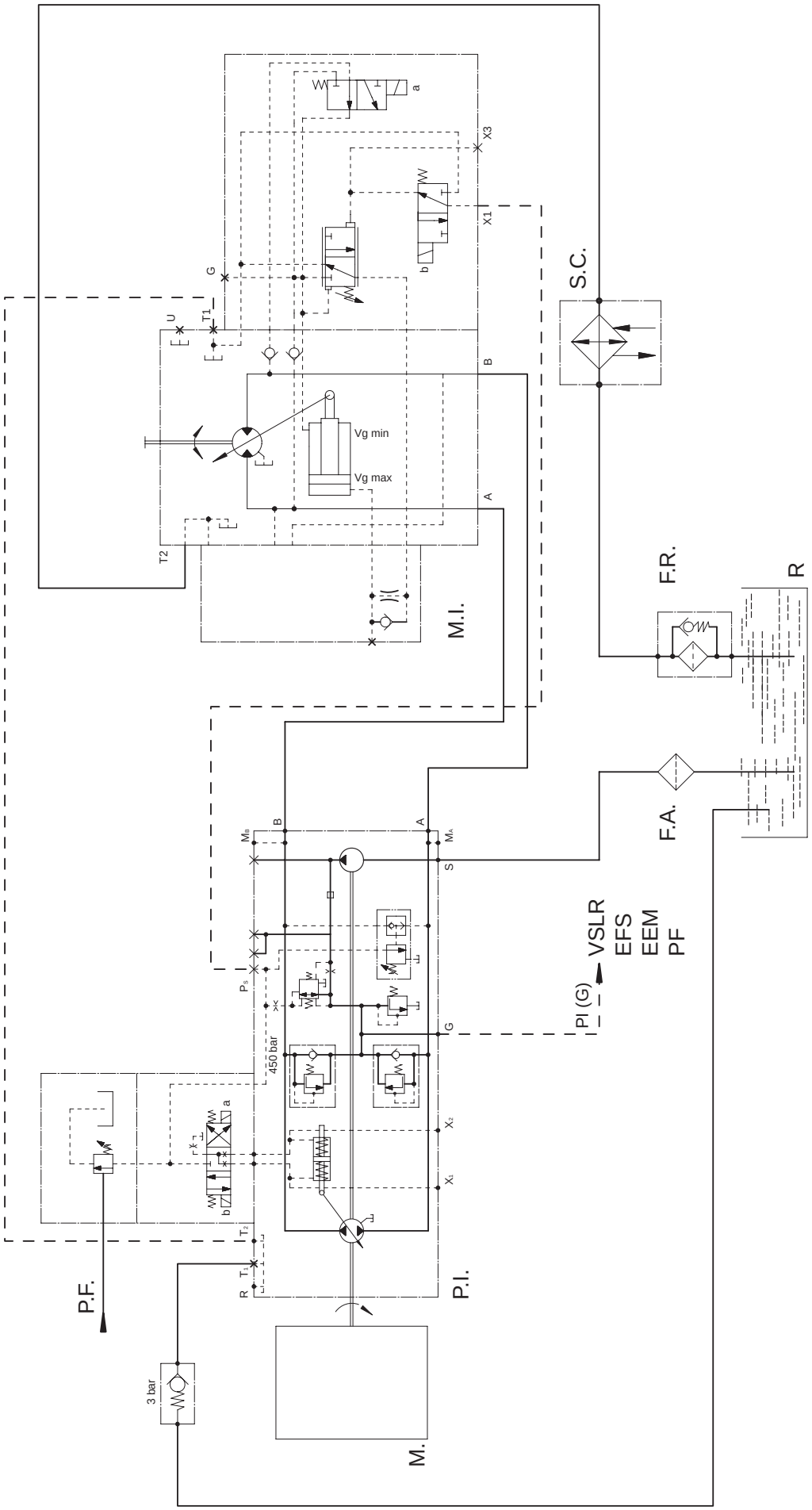
LEVELLING AND FANS HYDRAULIC SYSTEM LAYOUT



LEGEND - LEVELLING AND FANS HYDRAULIC SYSTEM LAYOUT

E.C.L.	=	Levelling control solenoid valve
F.A.	=	Intake filter
F.R.	=	Exhaust filter
M.	=	I.C. engine
M.V.R.A.	=	Water radiator fan motor
M.V.R.O.	=	Oil radiator fan motor
P.V.D.	=	Double fan pump
R.	=	Oil tank
V.L.	=	Levelling cylinder

HYDROSTATIC TRANSMISSION SYSTEM LAYOUT



LEGEND – HYDROSTATIC TRANSMISSION SYSTEM LAYOUT

EEM	=	Manipulator exclusion solenoid valve
EFS	=	Parking brake solenoid valve
F.A.	=	Intake filter
F.R.	=	Exhaust filter
M.	=	I.C. engine
M.I.	=	Hydrostatic motor
P.F.	=	Brake pump
P.I.	=	Hydrostatic pump
PI (G)	=	G connection of hydrostatic pump
S.C.	=	Radiator
R.	=	Oil tank
VSLR	=	Slow-fast speed selector valve

5 - OPTIONAL ACCESSORIES AVAILABLE

INTRODUCTION TO SAFETY

INTRODUCTION

- The manufacturer provides you with a large range of perfectly adaptable accessories (with guarantee) for your lift truck.

- The accessories are delivered together with a load chart relative to your lift truck. The instruction booklet and load chart must be kept in the lift truck. The use of possible accessories depends on the instructions in this Manual.

Certain specific uses require adaptation of accessories not included as optionals in the list.
Other solutions are available; for more information, please contact your agent or dealer.

Only accessories that are homologated and "CE" certified by the manufacturer can be used on your lift trucks. The manufacturer shall not be liable for unauthorized modifications or use of accessories.

Manitou assures oneself about the employement's capacity of this machine in normal conditions of working foreseen in the user's manual, with a static test coefficient of 1.33 and a dynamic test coefficient of 1, foreseen in the harmonized rules EN 1459 for the truck with variable capacity and EN 1726-1 for the forklift.

Do not use interchangeable accessories not originally included in the machine supply.

For subsequent requests for implementation of machine functions using other accessories, before starting up the machine, the user must request inspection for suitability for use by an authorized MANITOU technician, who will check the correct working and updating of the documentation necessary for using the new accessory. It is only after this inspection that a new "CE" conformity certificate will be issued for the machine indicating only the new accessories installed.

- RECOMMENDATIONS FOR USING THE LIFT TRUCK

REMEMBER THAT THIS SYMBOL MEANS:

ATTENTION ! BE CAREFUL ! YOUR SAFETY AND THAT OF YOUR LIFT TRUCK ARE AT STAKE.

- Abide by the data indicated on the load charts. Never attempt to lift loads exceeding those permitted on the load charts enclosed with the machine.
- Carry the load in a low position, with the telescopic boom fully retracted.
- Drive the truck at a speed suited to the ground conditions in question.
- When driving the truck without load, keep the telescopic boom low and fully retracted.
- Never drive too fast or brake sharply with a load.
- When the load is lifted, check to make sure no one can hamper the operation, and avoid incorrect manoeuvres.
- Never attempt operations that are beyond the capacity of the lift truck.
- Pay attention to electric cables.
- Never leave the truck parked with a raised load.
- Never allow anyone to come near or walk under a load.
- Always bear safety in mind and carry only well balanced loads.
- Never leave the lift truck loaded with the parking brake engaged on slopes with gradient exceeding 15%.
- For using a hoist or equipment with the load hanging from a hook:
  - *Position the hoist perpendicular to the load to be lifted.*
  - *The hook without load must descend gradually (gently) since, if released rapidly, the rope will wind around the drum resulting in serious damage to the rope, the limit stop, etc...*
  - *If the rope starts twisting on the block, unhook the fixed hook, pull the rope and turn it in the opposite direction to eliminate the twisting and then rehook.*
  - *Handle the control level gently to avoid jerking the load and eventual winding of the rope around the drum.*
  - *Lift the load vertically, avoiding oscillation and oblique lifting.*
  - *Check the rope daily and replace it immediately if it is worn, damaged or even just one string is broken (see ISO 4309), (consult your dealer).*
  - *Check the working of the hydraulic ascent/descent limit stops daily and the braking with load applied.*
  - *Lubricate rotating parts of the hook with oil periodically.*
  - *Check the rope winding around the drum, periodically.*
- The following accessories are not meant for lifting systems or for transferring persons.
- Before using the hoist, or any other equipment that hangs the load by a hook, inform the inspection authorities responsible (ISPEL) in your area (for Italy only).
- Remember to ask for an inspection by your local health authorities every year (for Italy only).

It is forbidden to lift hanging loads using fork accessories or other supports not meant for this function (Contact your agent or dealer).

Before you start using the hoist on the lift truck, ensure the compatibility of the machine and its safety system with the type of hoist required.

ATTENTION

Non conforming calibration of the safety system can be very hazardous for your safety: therefore contact your dealer immediately in case of doubt.

Certain accessories, owing to their dimensions, and with the boom lowered and retracted, run the risk of interfering with the front tyres and damaging them if the accessory is inclinded downwards.

TO ELIMINATE THIS RISK, EXTEND THE TELESCOPIC BOOM TO A SUFFICIENT LENGTH ACCORDING TO THE FORK LIFT TRUCK AND ACCESSORY, SO THAT THERE IS NO INTERFERENCE.

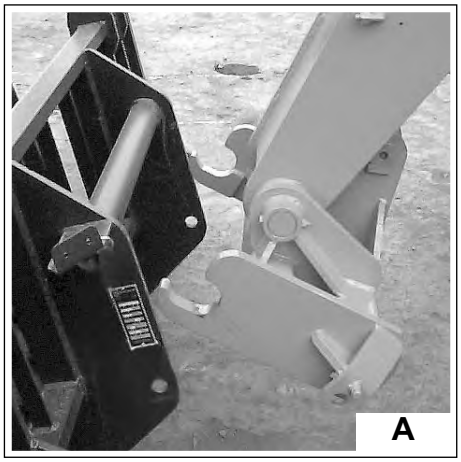
The maximum loads are defined by the lift truck capacity, also taking into account the weight and centre of gravity of the accessory. If the accessory capacity is lower than that of the lift truck, never exceed this limit.

Before starting up operation with an accessory on the lift truck, ensure the capacity of the machine and safety system calibration concerning the accessory used.

ACCESSORY WITHOUT HYDRAULIC SYSTEM AND MANUAL BLOCK

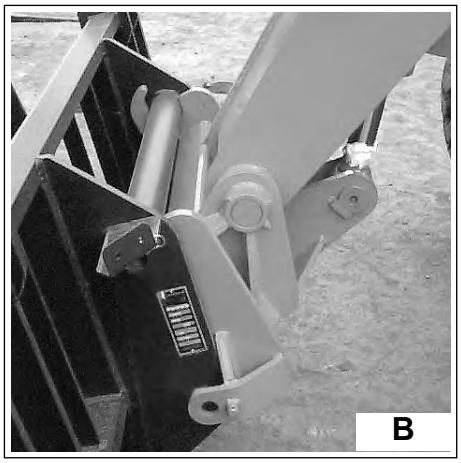
PICKING UP THE ACCESSORY

- Check to make sure the accessory is in a position to facilitate connection of the quick-release coupling. If it is not oriented correctly, take the necessary precautions to shift it to the maximum safety conditions.
- Check to make sure the check pin is inserted in its support on the chassis.
- Position the lift truck with the boom lowered in front and parallel to the accessory and incline the quick-release coupling forwards (Fig.A).
- Bring the quick-release coupling under the accessory coupling tube, raise the boom slightly and incline the coupling backwards to position the accessory (Fig.B).
- Disengage the accessory from the ground to facilitate blocking.


A

MANUAL BLOCK

- Take the check pin on the support and block the accessory (Fig.C). Remember to fit the split pin.

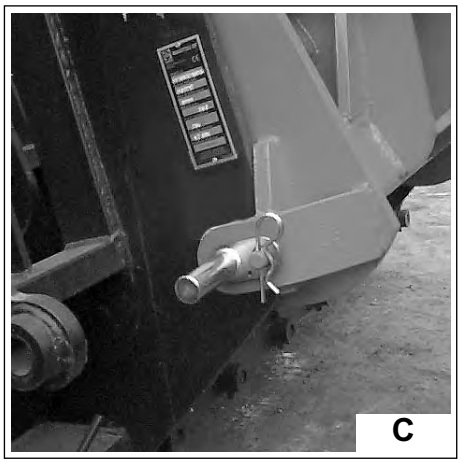

B

MANUAL RELEASE

- Repeat the MANUAL BLOCK operation in reverse taking care to refit the check pin in the support on the chassis.

REMOVING (AND PLACING) THE ACCESSORY

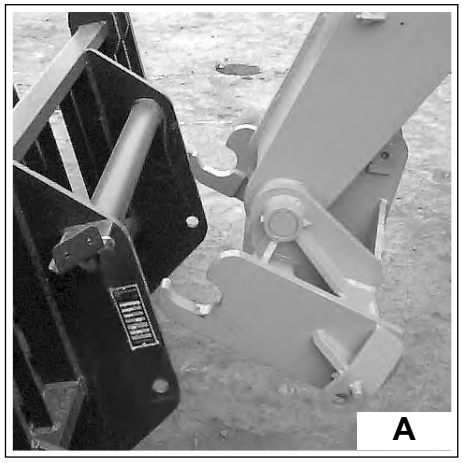
- Repeat the ACCESSORY PICKUP operation in reverse order, taking care to place it in a safe position on compact, level ground.


C

ACCESSORY WITHOUT HYDRAULIC SYSTEM AND HYDRAULIC BLOCK (OPTION)

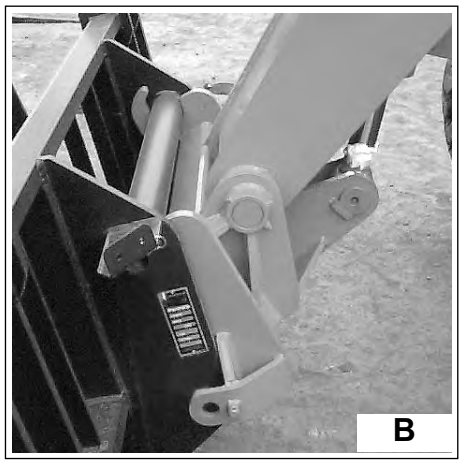
PICKING UP THE ACCESSORY

- Check to make sure the accessory is in a position to facilitate connection of the quick-release coupling. If it is not oriented correctly, take the precautions necessary to shift it to maximum safety conditions.
- Check to make sure the blocking jack rods are retracted.
- Position the lift truck with the boom lowered in front and parallel to the accessory and incline the quick-release coupling forwards (Fig.A).
- Bring the quick-release coupling under the accessory coupling tube, raise the boom slightly and incline the coupling backwards to position the accessory (Fig.B).
- Disengage the accessory from the ground to facilitate blockage.


A

HYDRAULIC BLOCK AND RELEASE (OPTION)

- Blocking and releasing an accessory is done by means of an optional command (command which can be activated by means of a special pushbutton or the manipulator itself, depending on the type of lift truck in your possession). For more information, refer to the lift truck Use and Maintenance Manual.


B

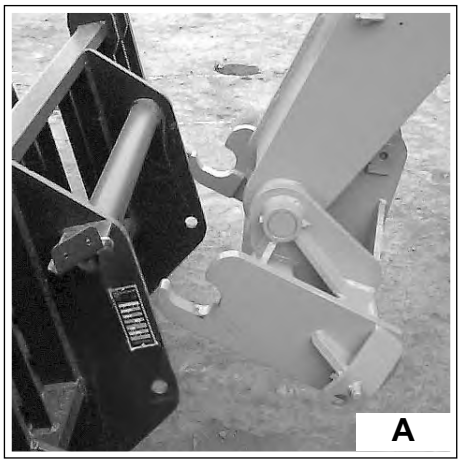
REMOVING (AND PLACING) THE ACCESSORY

- Repeat the ACCESSORY PICKUP operation in reverse order, taking care to place it in a safe position on compact, level ground.

ACCESSORY WITH HYDRAULIC SYSTEM AND MANUAL BLOCK (OPTION)

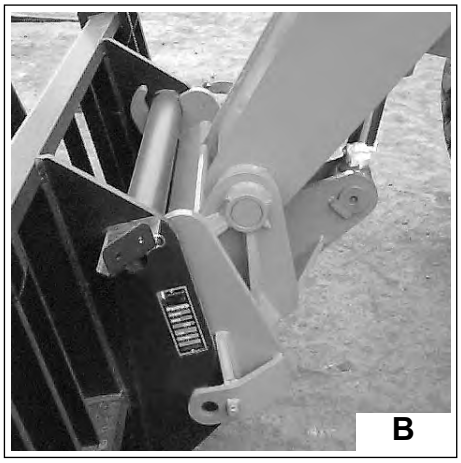
PICKING UP THE ACCESSORY

- Check to make sure the accessory is in a position to facilitate connection of the quick-release coupling. If it is not oriented correctly, take the necessary precautions to shift it to the maximum safety conditions.
- Check to make sure the check pin is inserted in its support on the chassis.
- Position the lift truck with the boom lowered in front and parallel to the accessory and incline the quick-release coupling forwards (Fig.A).
- Bring the quick-release coupling under the accessory coupling tube, raise the boom slightly and incline the coupling backwards to position the accessory (Fig.B).
- Disengage the accessory from the ground to facilitate blockage.



MANUAL BLOCKING AND CONNECTION OF THE ACCESSORY

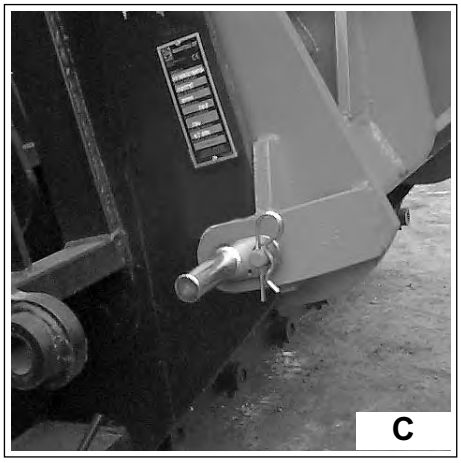
- Take the check pin on the support and block the accessory (Fig.C). Remember to fit the split pin.
- Switch off the combustion engine.
- Suppress the pressure in the accessory hydraulic circuit by means of the optional command (refer to the pages concerning the commands in the Use and maintenance manual).
- Connect the quick-release couplings according to the description of the accessory's hydraulic movements..



Keep the quick-release couplings clean and plug unused holes for protection.

REMOVING (AND PLACING) THE ACCESSORY

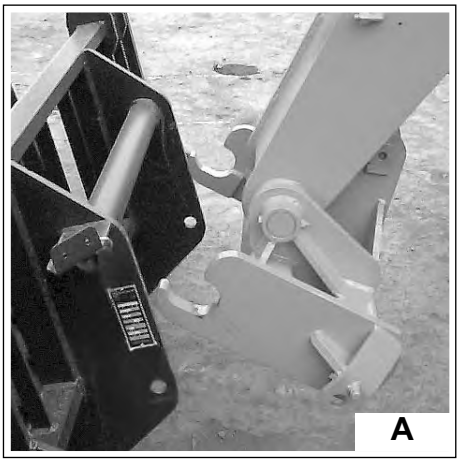
- Repeat the ACCESSORY PICKUP operation in reverse order, taking care to place it in a safe position on compact, level ground.



ACCESSORY WITH HYDRAULIC SYSTEM AND HYDRAULIC BLOCK (OPTION)

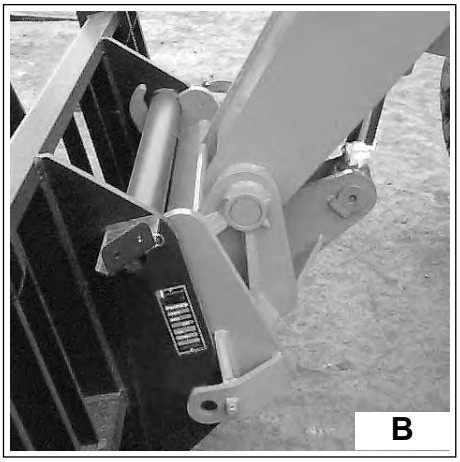
PICKING UP THE ACCESSORY

- Check to make sure the accessory is in a position to facilitate connection of the quick-release coupling. If it is not oriented correctly, take the precautions necessary to shift it to maximum safety conditions.
- Check to make sure the blocking jack rods are retracted.
- Position the lift truck with the boom lowered in front and parallel to the accessory and incline the quick-release coupling forwards (Fig.A).
- Bring the quick-release coupling under the accessory connection tube, raise the boom slightly and incline the coupling backwards to position the accessory (Fig.B).
- Disengage the accessory from the ground to facilitate blockage.


A

HYDRAULIC BLOCK AND RELEASE (OPTION)

- Blocking and releasing an accessory is done by means of an optional command (command which can be activated by means of a special pushbutton or the manipulator itself depending on the type of lift truck in your possession). For more information, refer to the relevant pages in the lift truck Operation and Maintenance Manual.


B

Remember to carry out decompression of the optional circuit each time a supplementary accessory is to be connected to or disconnected from the lift truck; this will make it easier to connect and disconnect the quick-release couplings at the top of the boom.

REMOVING (AND PLACING) THE ACCESSORY

- Repeat the ACCESSORY PICKUP operation in reverse order, taking care to place it in a safe position on compact, level ground.

USING THE FEM TYPE FORK-HOLDER

PICKING UP THE ACCESSORY

- Check to make sure the accessory is in a position to facilitate connection of the quick-release coupling. If it is not oriented correctly, take the precautions necessary to shift it to maximum safety conditions.
- Check to make sure the check pin is inserted in the support provided on the chassis.
- Position the lift truck with the boom lowered in front and parallel to the accessory and incline the quick-release coupling forwards (Fig.A).
- Bring the quick-release coupling under the accessory coupling tube, raise the boom slightly and incline the coupling backwards to position the accessory (Fig.B).
- Disengage the accessory from the ground to facilitate blockage.
- Check to make sure that the safety screw is present and blocked perfectly on the fork-holder (Fig.C).

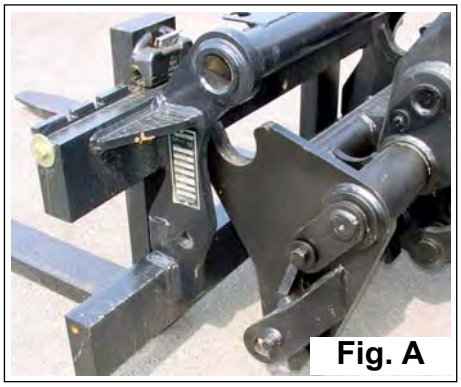


Fig. A

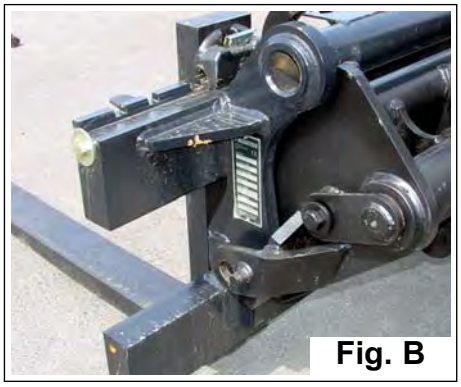


Fig. B

MANUAL BLOCK

- Take the check pin on the support and block the accessory. Remember to fit the split pin (Fig.D).

MANUAL RELEASE

- Repeat the MANUAL BLOCK procedure in reverse order taking care to refit the check pin in the support on the chassis.

REMOVING (AND PLACING) THE ACCESSORY

- Repeat the ACCESSORY PICKUP procedure in reverse order, taking care to place it in a safe position on compact, level ground.

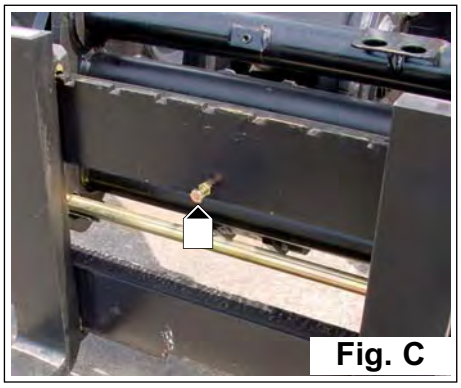


Fig. C

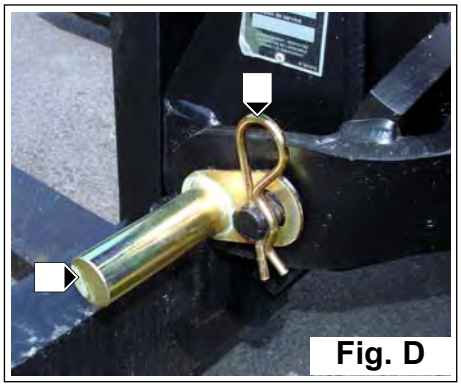


Fig. D

ADJUSTING THE OPENING OF THE FORKS

- Raise the lever of the forks check pin (Fig. A).
- Move the forks manually to the required operating width.
- Lower the check pin rod (Fig. B) and move the forks until they are inserted in the locking notch present on the fork carriage (Fig. C).

When lifting loads with the lift truck, first check to make sure the fork check pin is inserted in the notch present on the fork carriage.

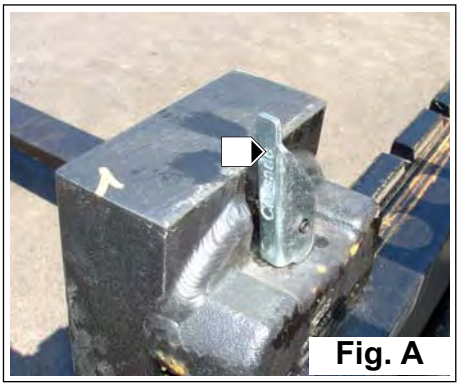


Fig. A

PERIODIC INSPECTION OF THE FORKS

- Check the thickness at the fork heel to make sure it is not less than 90% of the original thickness, which, for forks with constant section, corresponds to the shoulder thickness (see ISO standard 5057).
- Check for permanent deformation or alignment defects, if any, in conformity to ISO standard 5057. The difference in height of the tips must be less than 3% of the length of the horizontal part of the fork. The permanent deformations must be checked by checking the angle or diagonal between the fork tip and shoulder.
- Visually check the forks to make sure there are no cracks near the heel or the fork hook. In case of doubt, proceed with penetrant liquid testing. Repairs, if any, are only permitted is carried out in conformity with the indications of ISO standard 5057 and documented accordingly.

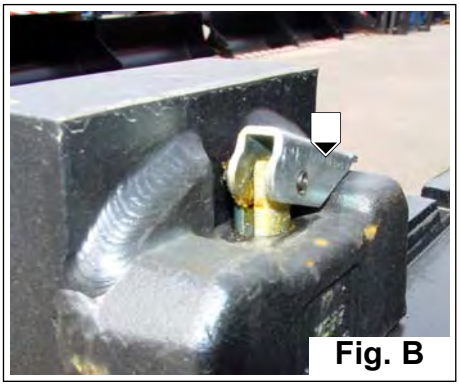


Fig. B

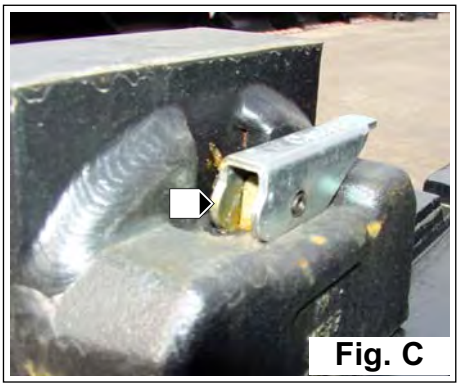


Fig. C

DISASSEMBLING THE FORKS

- Remove the fork safety screw from the fork-holder (Fig. A). - Shift the fork manually towards the centre of the fork-holder, lift it manually by the tip and position it slightly away from the centre on the side, resting it on the lower guide (Fig. B). - Lower the boom and slew it forwards to rest the forks on the ground and detach them from the fork-holder upper guide (Fig. C).

ATTENTION DANGER
Take great care to prevent the forks from falling to the side.

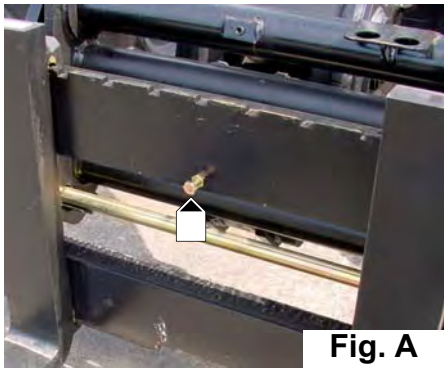


Fig. A

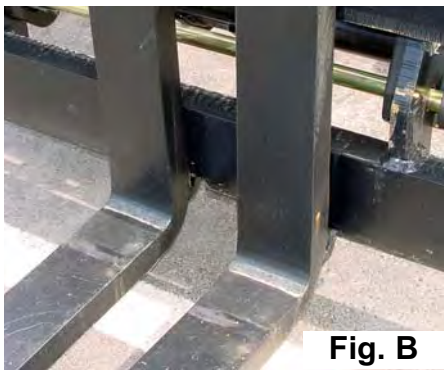


Fig. B

Fig. C

ASSEMBLING THE FORKS

- Position the lift truck in such a manner that the forks are in front, aligned longitudinally to the truck (Fig. A).
- Incline the fork-holder forwards, push against the forks and then hook them in the upper guide by slewing the boom backwards and raising it (Fig. B).
- With the forks raised off the ground, move them manually towards the centre of the fork-holder to insert them in the lower guide and then move them outwards to the required operating width (Fig. C), making sure that they are inserted correctly in the upper and lower guides.
- Fit the fork safety screw in the fork-holder, blocking it by means of the lock nut (Fig. D).

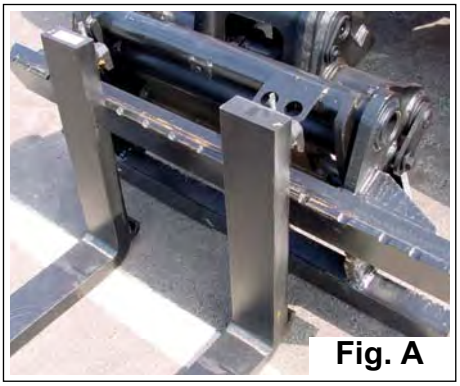


Fig. A

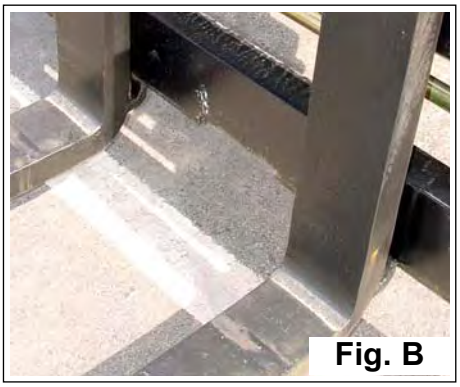


Fig. B

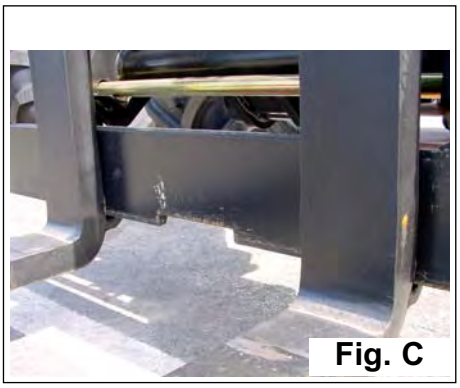


Fig. C

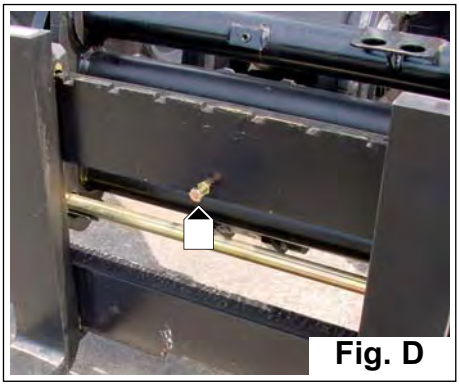


Fig. D

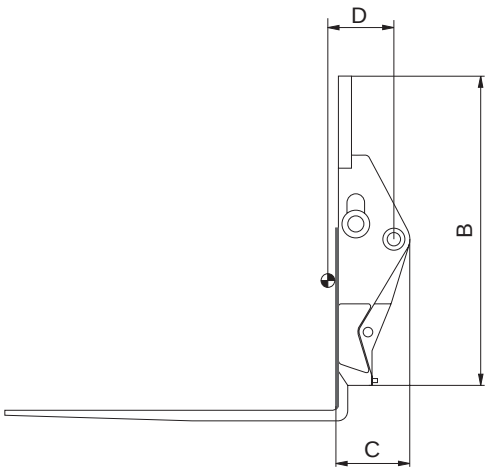
TECHNICAL SPECIFICATIONS OF ACCESSORIES

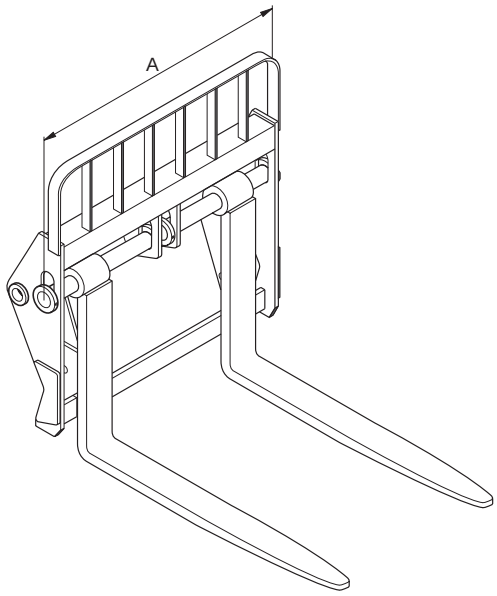
INDEX

DESCRIPTION	NAME	860	950	PAGE
PF FLOTT / L 1030	**Floating fork-holder (4999 kg)**		●	**13**
PF FLOTT / L 1430	**Floating fork-holder (7500 kg)**	●		**13**
PF FEM 3 / 1320	**Fem fork-holder (4999 kg)**		●	**14**
PF FEM 4 / 1750	**Fem fork-holder (7500 kg)**	●		**14**
PF FEM 4 / 2000	**Fem fork-holder (7500 kg)**	●		**14**
TDL FEM 3 / 1320	**Fem fork holder with transfer device (4999 kg)**		●	**15**
TDL FEM 4 / 1750	**Fem fork holder with transfer device (7500 kg)**	●		**15**
F FLOTT	**Floating forks (2500 kg)**		●	**13**
F FLOTT	**Floating forks (3750 kg)**	●		**13**
F FEM 3	**Fem forks (2500 kg)**		●	**14-15**
F FEM 4	**Fem forks (3750 kg)**	●		**14-15**
ARGANO 3T	**3 Ton Winch**	●	●	**16**
ARGANO 5T	**5 Ton Winch**	●	●	**16**
P 600	**Arm P 600**	●	●	**17**
PT 600	**Arm PT 600**	●	●	**18**
P 1200	**P Arm 1200**	●	●	**19**
PT 1200	**PT Arm 1200**	●	●	**20**
PC 30	**Arm with hook**	●	●	**21**
PC 40	**Arm with hook**	●	●	**21**
PC 50	**Arm with hook**	●	●	**21**
PC 60	**Arm with hook**	●		**22**
P 4000	**Arm**	●	●	**23**
MIX 350	**Mixer bucket**	●	●	**24**
MIX 500	**Mixer bucket**	●	●	**24**
MIX 750	**Mixer bucket**	●	●	**24**
GL 400	**Bucket for concrete**	●	●	**25**
GL 600	**Bucket for concrete**	●	●	**25**
GL 800	**Bucket for concrete**	●	●	**25**
GL 1500	**Bucket for concrete**	●	●	**25**
CBC 1500 L2500	**Shovel for building construction**	●	●	**26**
CBR 1500 L2500	**Reclaim shovel**	●	●	**27**
CBA 2000 L2500	**Agricultural shovel**	●	●	**28**
CBA 3000 L2500	**Agricultural shovel**	●	●	**29**

FLOATING FORK-HOLDER

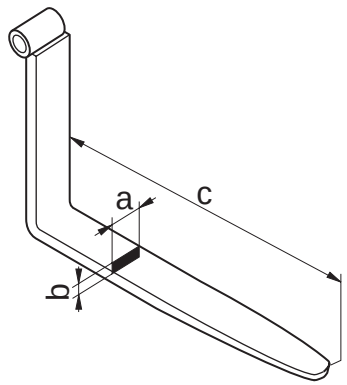
SPECIFICATIONS





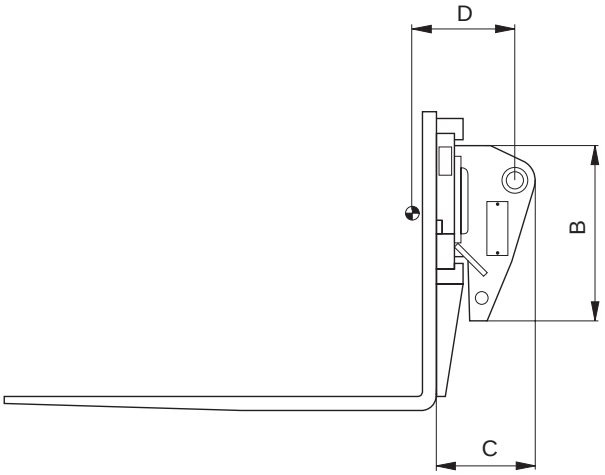
SPECIFICATIONS						
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	WEIGHT
		A	B	C	D	
PF FLOTT / L 1030	4999 Kg	1127	1130	263	190 mm	456 Kg
PF FLOTT / L 1430	7500 Kg	1545	1325	270	300 mm	565 Kg

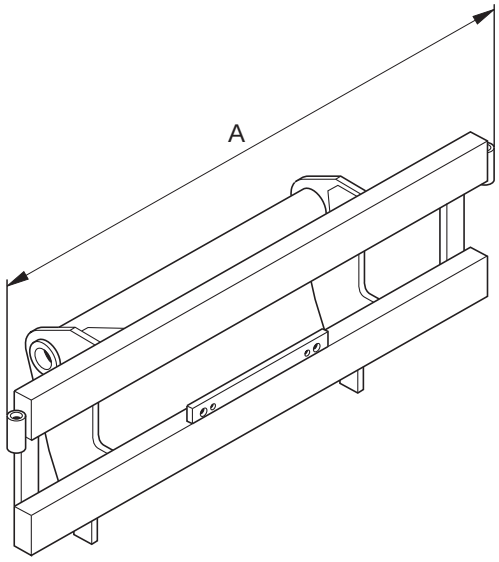
FORK SPECIFICATIONS					
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			WEIGHT
		A	B	C	
F FLOTT	2 X 2500 Kg	150	60	1200	141 Kg
F FLOTT	2 X 3750 Kg	200	60	1200	198 Kg



FEM FORK-HOLDER

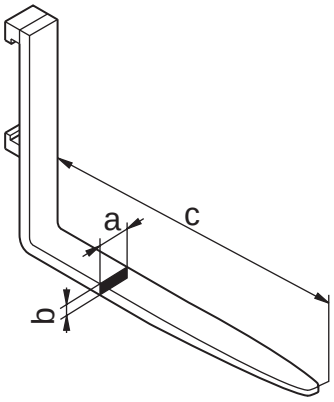
SPECIFICATIONS





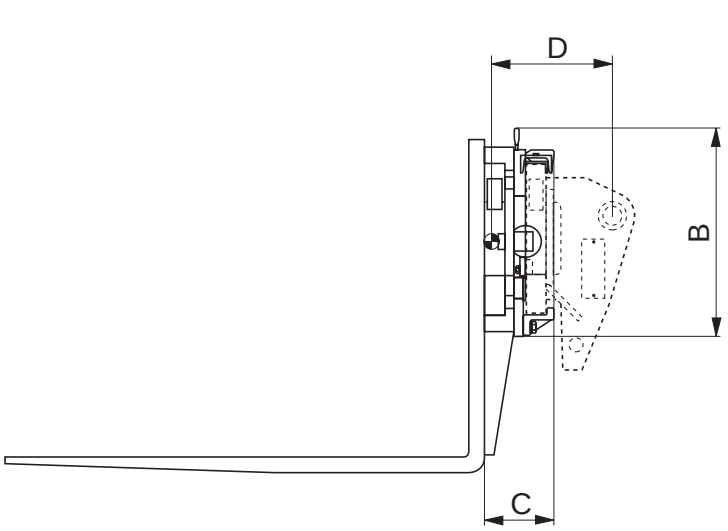
SPECIFICATIONS						
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	WEIGHT
		A	B	C	D	
PF FEM 3 / 1320	4999 Kg	1404	745	229	149 mm	340 Kg
PF FEM 4 / 1750	7500 Kg	1800	630	300	220 mm	850 Kg
PF FEM 4 / 2000	7500 Kg	2050	870	320	200 mm	980 Kg

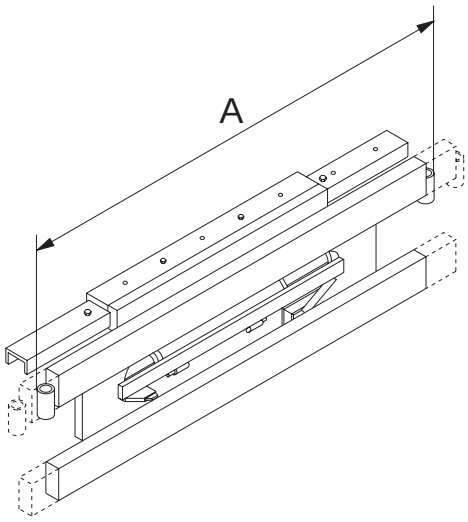
FORK SPECIFICATIONS					
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			WEIGHT
		A	B	C	
F FEM 3	2 X 2500 Kg	150	50	1200	104 Kg
F FEM 4	2 X 3750 Kg	200	60	1200	195 Kg



FEM FORK HOLDER WITH TRANSFER DEVICE

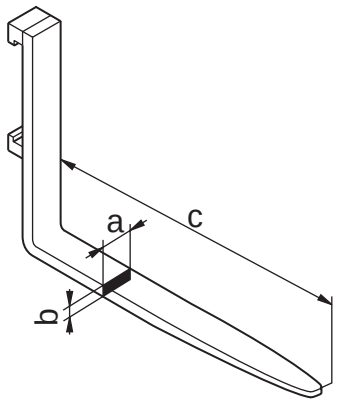
SPECIFICATIONS





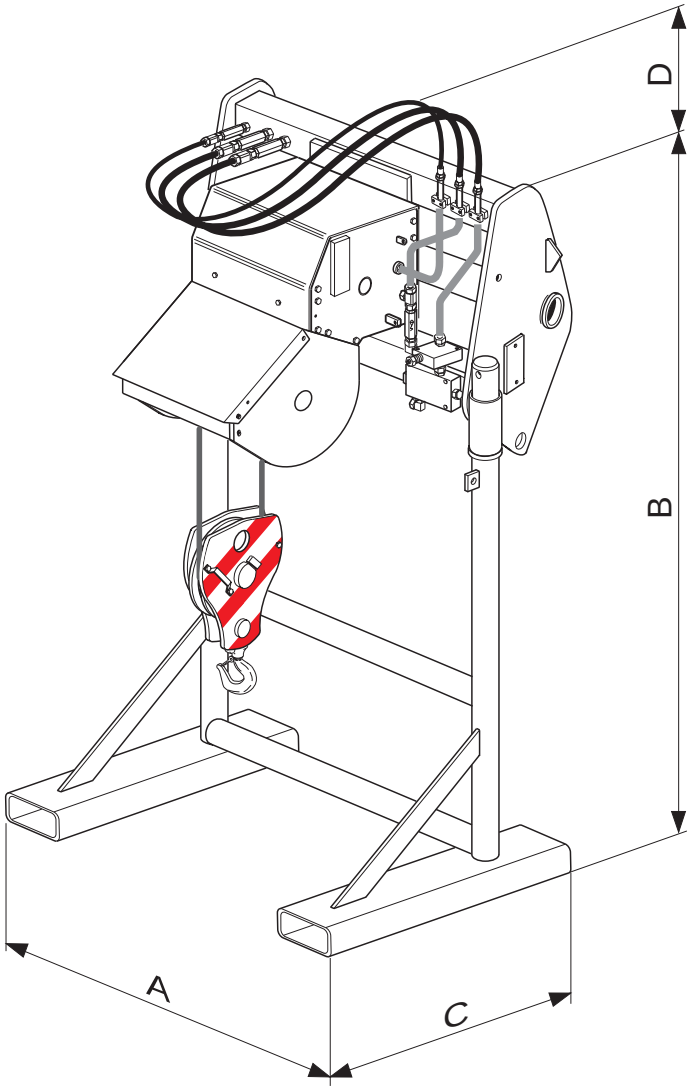
SPECIFICATIONS						
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	WEIGHT
		A	B	C	D	
TDL FEM 3 / 1320	4999 Kg	1404	618	118	200 mm	490 Kg
TDL FEM 4 / 1750	7500 Kg	1800	755	140	200 mm	1130 Kg

FORK SPECIFICATIONS					
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			WEIGHT
		A	B	C	
F FEM 3	2 X 2500 Kg	150	50	1200	104 Kg
F FEM 4	2 X 3750 Kg	200	60	1200	195 Kg



WINCH 3 - 5 TON

SPECIFICATIONS

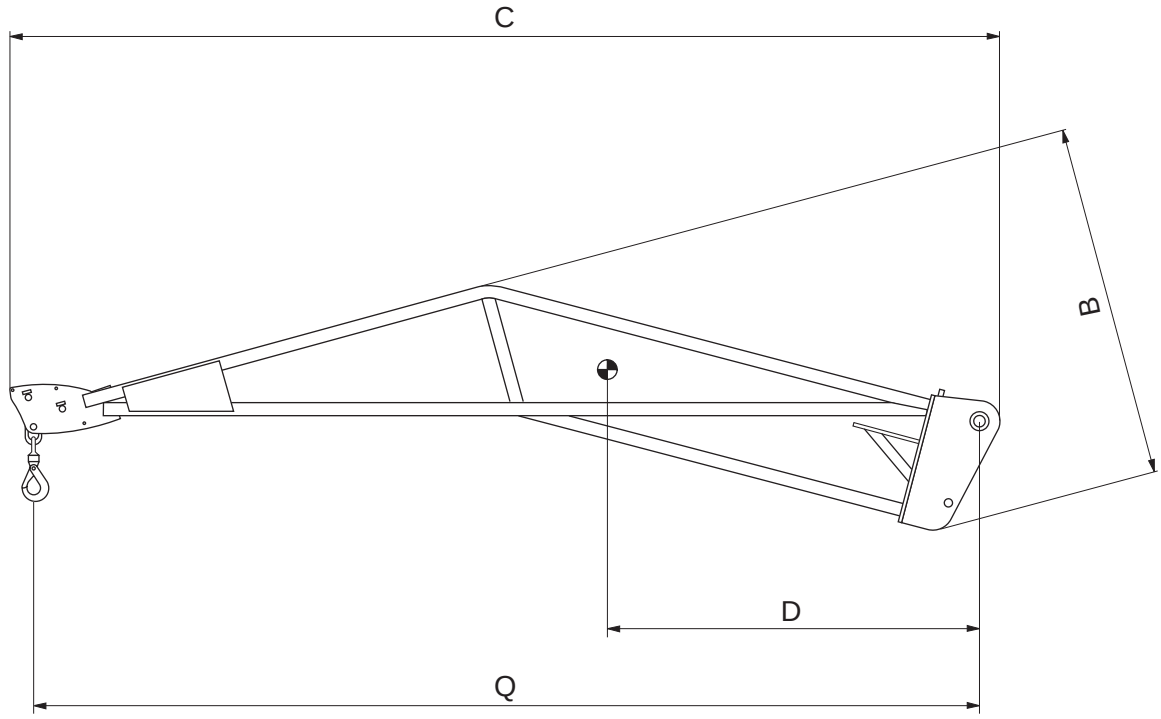


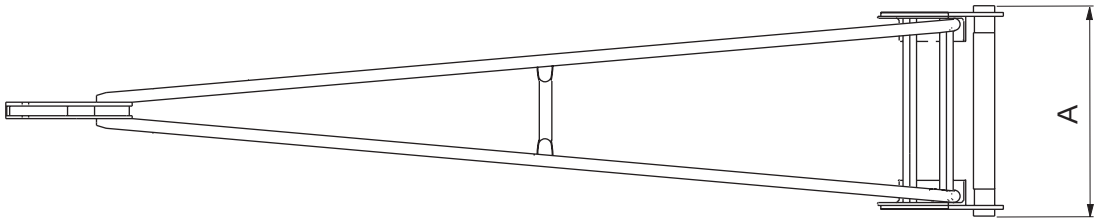
LUBRICATION			
DESCRIPTION	RECOMMENDED PRODUCT	QUANTITY 3 Ton / 5 Ton	FREQUENCY
ROPE	GREASE HD NLGI 2	/	30 HOURS
BLOCK	GREASE NLGI 2	/	30 HOURS
WINCH RED.GEAR	OIL MANITOU ISO 46	0,25 L / 1,3 L	250 HOURS
HOOK ROTATION	OIL AT 40	/	30 HOURS

SPECIFICATIONS											
DESCRIPTION	CAPACITY		ROPE	HOOK SPEED	LIMIT STOP	DIMENSIONS (mm)				"CE" HOOK	WEIGHT
						A	B	C	D	Q	
WINCH 3T	3000 Kg WITH 2 ROPES	1500 Kg DIRECT TYPE	Ø 10 mm x 46 m	24 m/min	HYDRAULIC	1070	1830	900	200	5 TON	400 Kg
WINCH 5T	5000 Kg WITH 2 ROPES	2500 Kg DIRECT TYPE	Ø 12 mm x 46 m	18 m/min	HYDRAULIC	1070	1830	900	200	5 TON	420 Kg

ARM P 600

SPECIFICATIONS

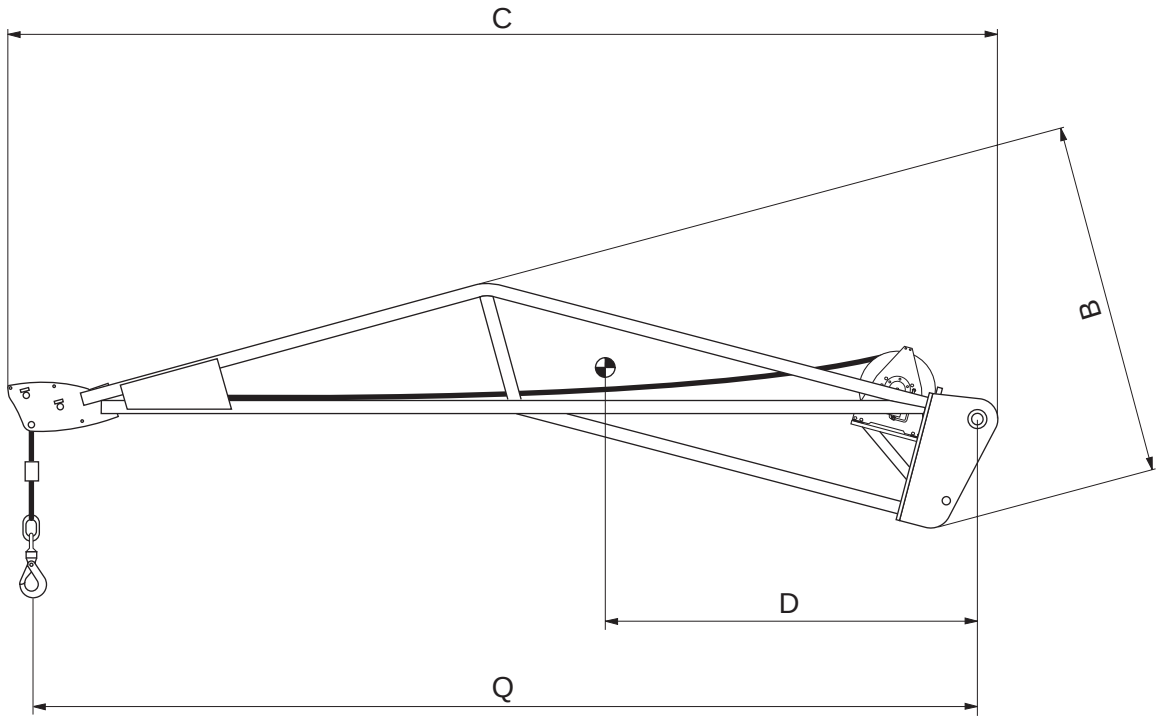


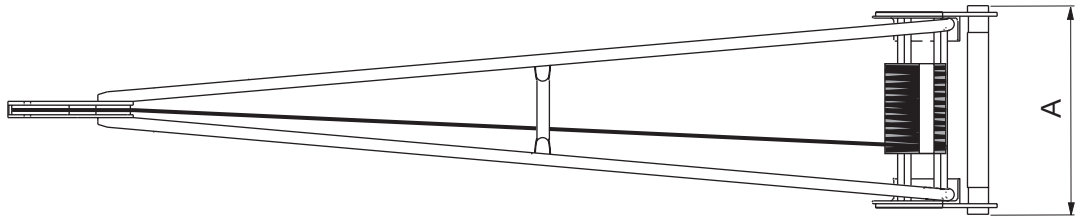


SPECIFICATIONS							
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	HOOK DISTANCE	WEIGHT
		A	B	C	D	Q	
P 600	600 Kg	830	815	4027	1320 mm	3910 mm	210 Kg

ARM PT 600

SPECIFICATIONS



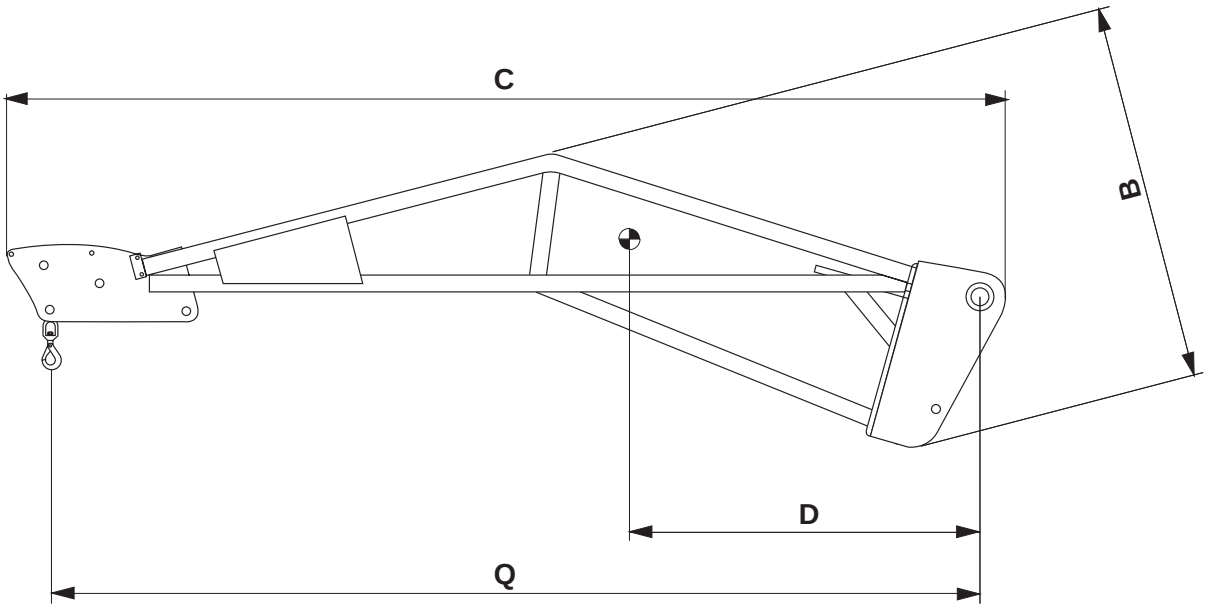


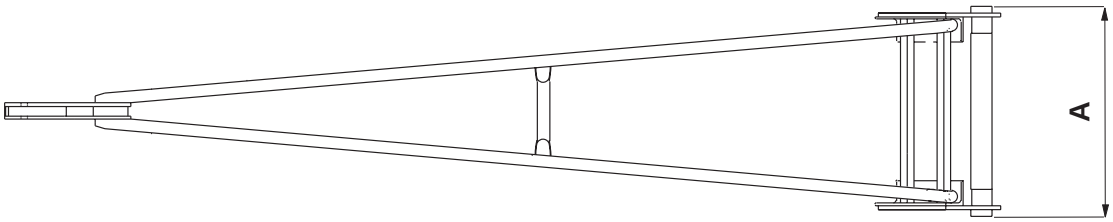
LUBRICATION			
DESCRIPTION	RECOMMENDED PRODUCT	QUANTITY	FREQUENCY
ROPE	GREASE HD NLGI 2	/	30 HOURS
BLOCK	GREASE NLGI 2	/	30 HOURS
WINCH RED.GEAR	OIL MANITOU ISO 46	0,3 L	250 HOURS
HOOK ROTATION	OIL AT 40	/	30 HOURS

SPECIFICATIONS										
DESCRIPTION	CAPACITY	ROPE	HOOK SPEED	LIMIT STOP	DIMENSIONS (mm)			ACCESSORY	HOOK DISTANCE	WEIGHT
					A	B	C	D	Q	
PT 600	600 Kg	Ø 7 mm x 30 m	45 m/min	IDRAULICO	830	815	4027	1170 mm	3840 mm	320 Kg

ARM P 1200

SPECIFICATIONS

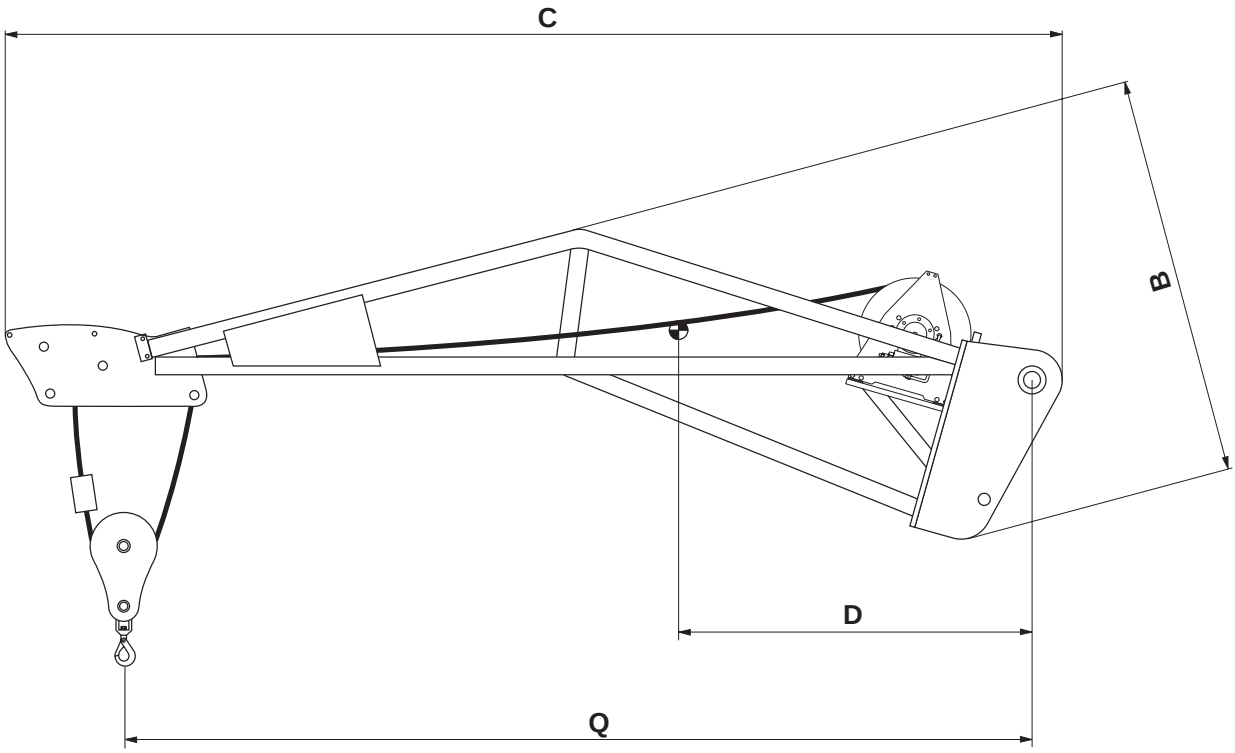


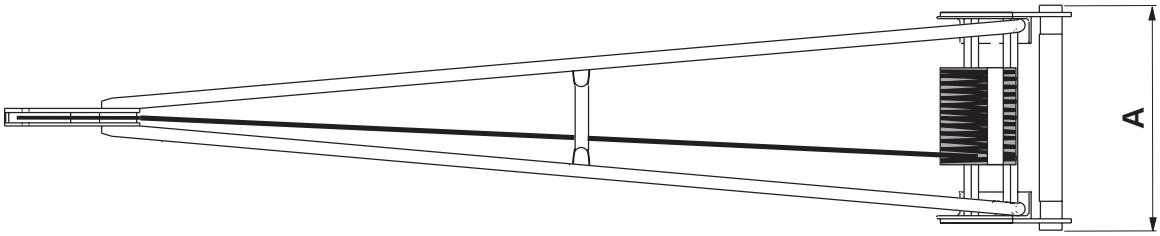


SPECIFICATIONS							
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	HOOK DISTANCE	WEIGHT
		A	B	C	D	Q	
P 1200	1200 Kg	830	868	2944	1100 mm	2500 mm	165 Kg

ARM PT 1200

SPECIFICATIONS



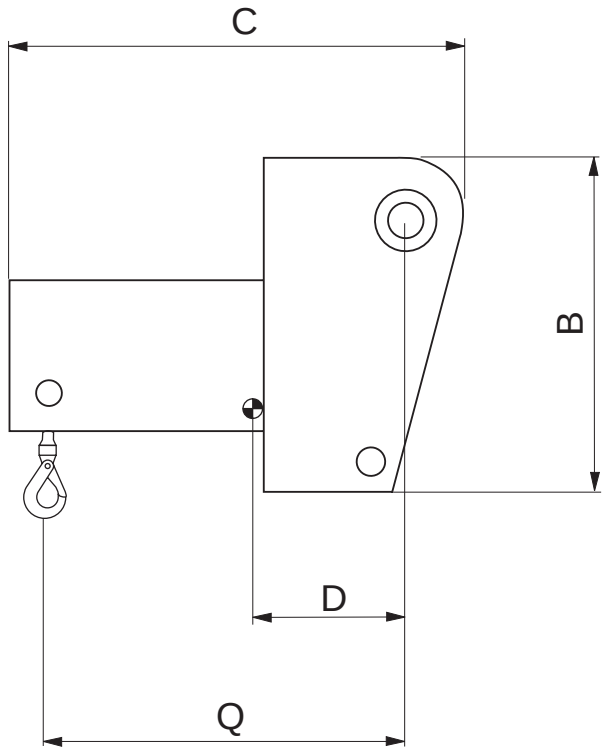


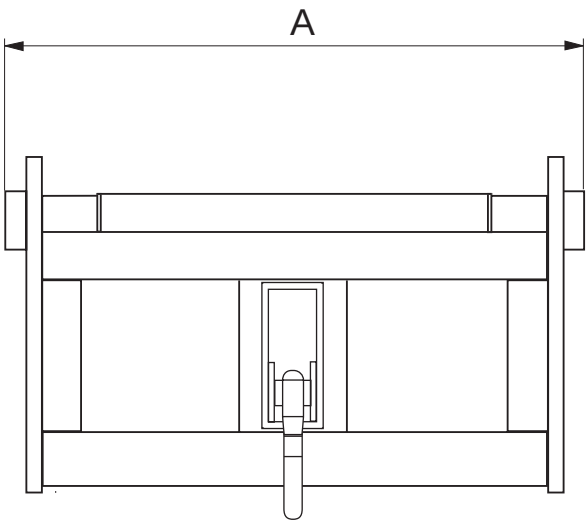
LUBRICATION			
DESCRIPTION	RECOMMENDED PRODUCT	QUANTITY	FREQUENCY
ROPE	GREASE HD NLGI 2	/	30 HOURS
BLOCK	GREASE NLGI 2	/	30 HOURS
WINCH RED.GEAR	OIL MANITOU ISO 46	0,3 L	250 HOURS
HOOK ROTATION	OIL AT 40	/	30 HOURS

SPECIFICATIONS										
DESCRIPTION	CAPACITY	ROPE	HOOK SPEED	LIMIT STOP	DIMENSIONS (mm)			ACCESSORY	HOOK DISTANCE	WEIGHT
					A	B	C	D	Q	
PT 1200	1200 Kg	Ø 6 mm x 46 m	23 m/min	IDRAULICO	830	868	2944	910 mm	2450 mm	323 Kg

ARM WITH HOOK

SPECIFICATIONS

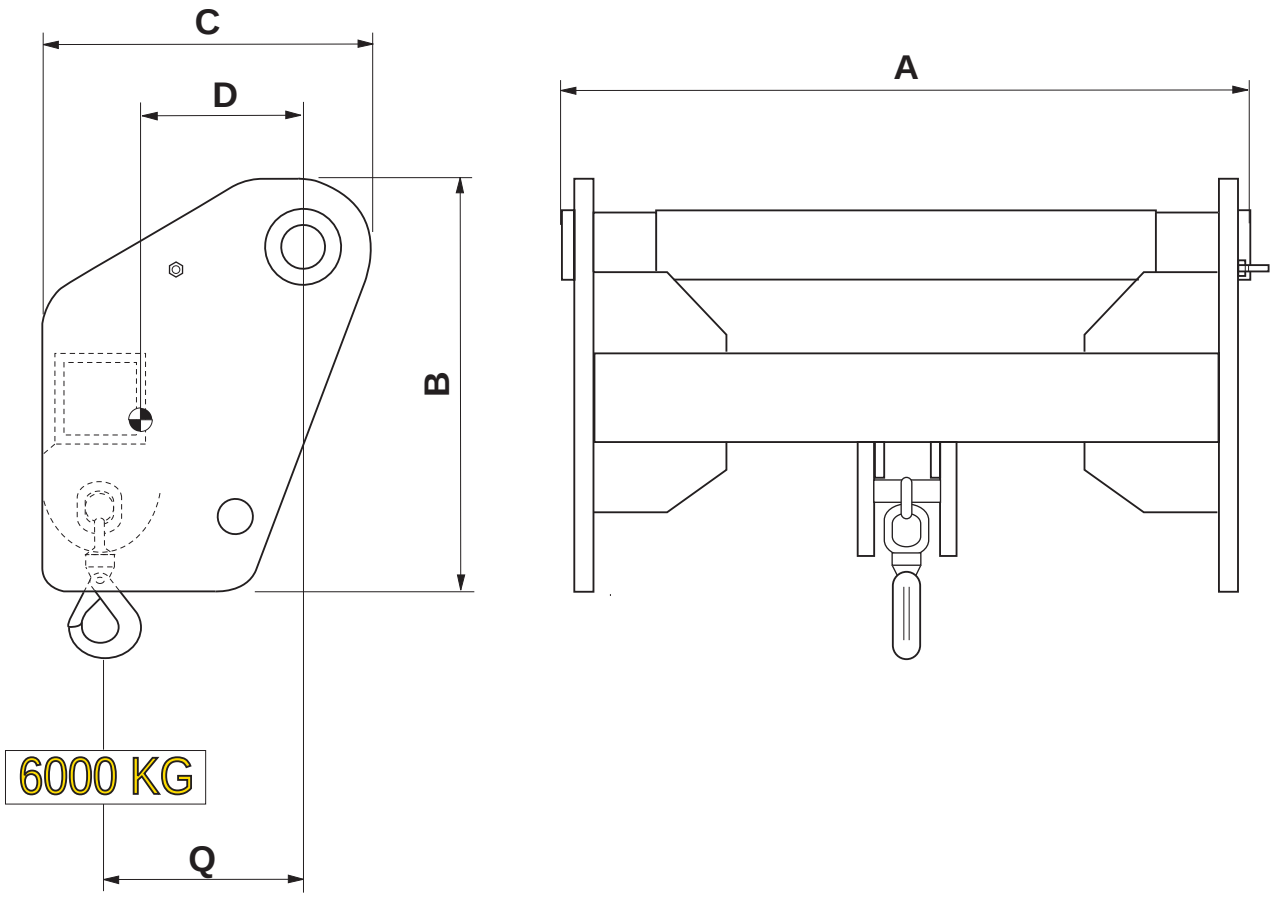




SPECIFICATIONS							
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	HOOK DISTANCE	WEIGHT
		A	B	C	D	Q	
PC 30	3000 Kg	810	470	610	175 mm	470 mm	115 Kg
PC 40	4000 Kg	810	470	610	175 mm	470 mm	115 Kg
PC 50	5000 Kg	810	470	610	175 mm	470 mm	115 Kg

ARM WITH HOOK

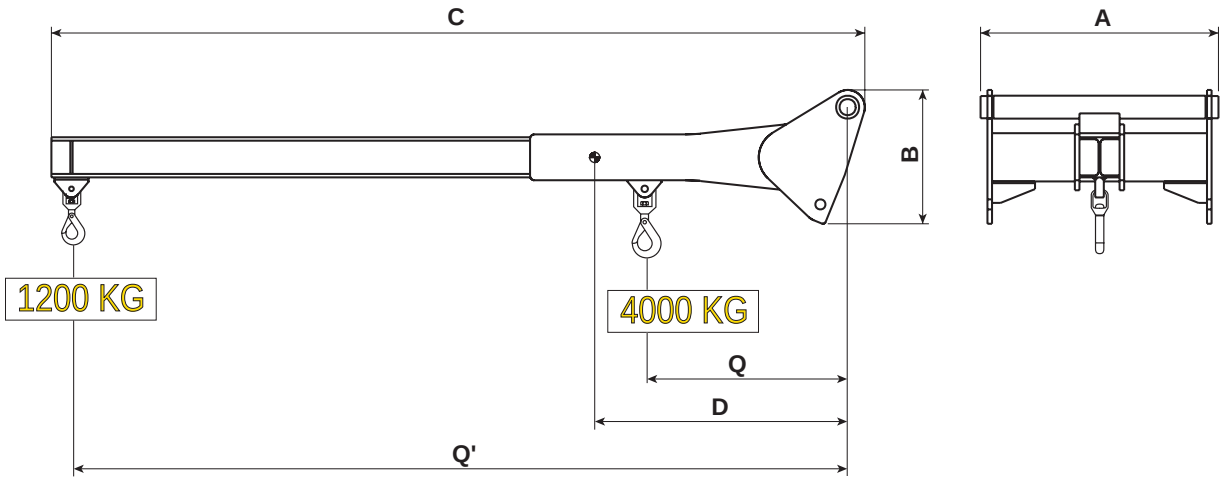
SPECIFICATIONS



SPECIFICATIONS							
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	HOOK DISTANCE	WEIGHT
		A	B	C	D	Q	
PC 60	6000 Kg	815	520	425	210 mm	260 mm	130 Kg

ARM P 4000

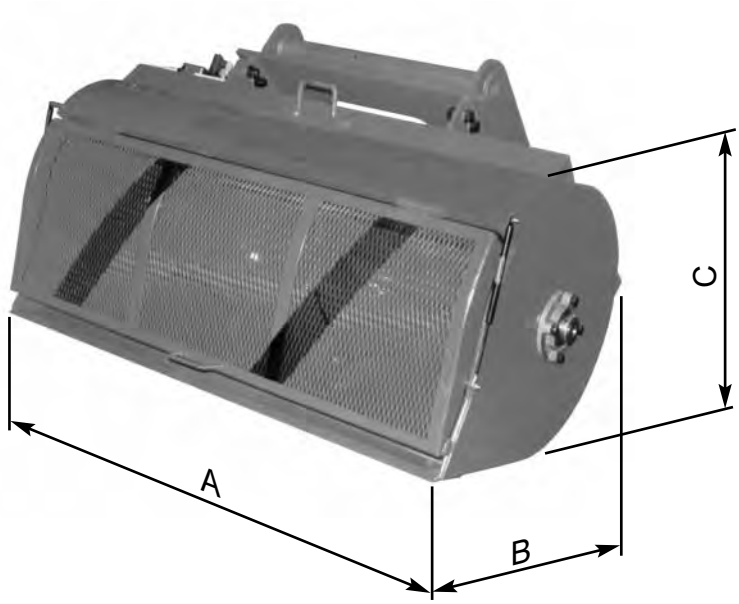
SPECIFICATIONS



SPECIFICATIONS								
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	HOOK DISTANCE		WEIGHT
		A	B	C	D	Q'	Q	
P 4000	4000 Kg	830	467	2832	900 mm	710 mm	2710 mm	210 Kg

MIXER BUCKET

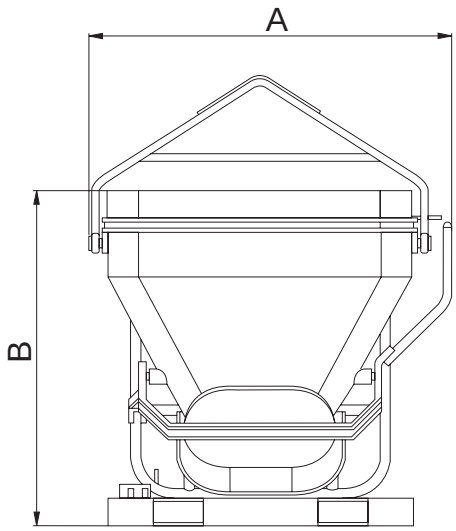
SPECIFICATIONS

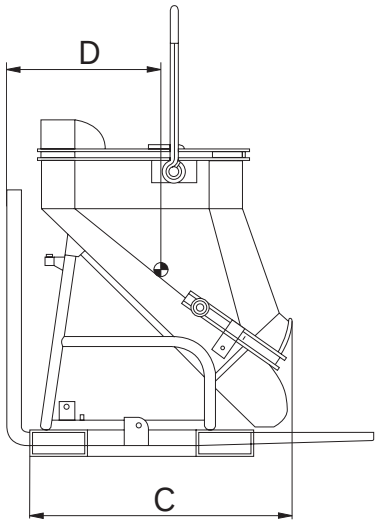


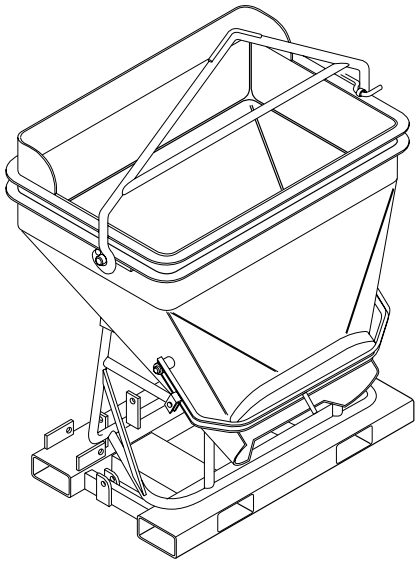
SPECIFICATIONS						
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			INLET OPENING	WEIGHT
		A	B	C		
MIX 350	350 L	1570	1080	1120	HYDRAULIC	540 Kg
MIX 500	500 L	1570	1080	1120	HYDRAULIC	540 Kg
MIX 750	750 L	1570	1080	1120	HYDRAULIC	540 Kg

BUCKET FOR CONCRETE

SPECIFICATIONS



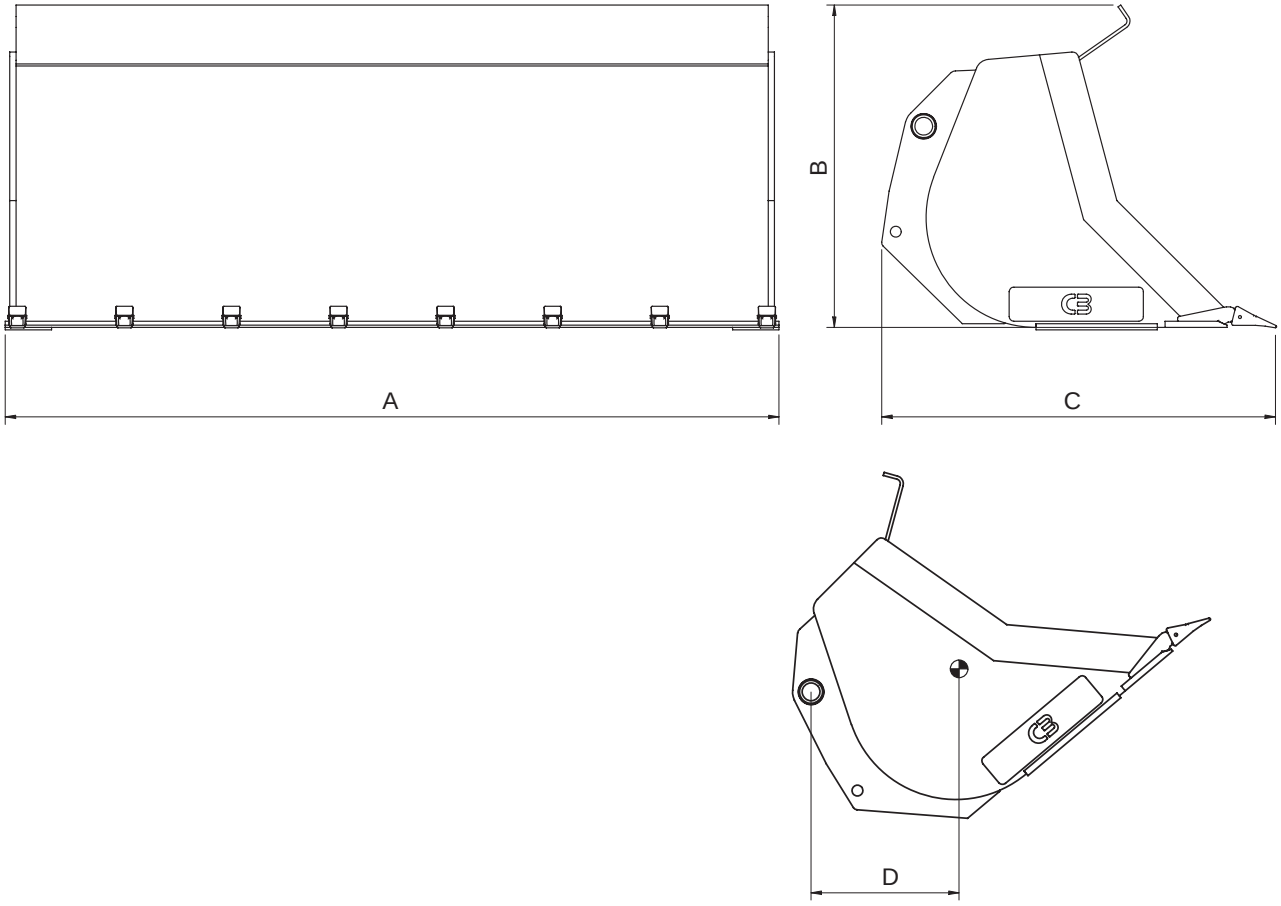




SPECIFICATIONS						
DESCRIPTION	CAPACITY	DIMENSIONS (mm)			ACCESSORY	WEIGHT
		A	B	C		
GL 400	400 L / 880 Kg	1200	1285	850	480 mm	157 Kg
GL 600	600 L / 1320 Kg	1540	1435	1070	560 mm	277 Kg
GL 800	800 L / 1760 Kg	1540	1635	1070	550 mm	308 Kg
GL 1500	1500 L / 330 Kg	1790	1745	1135	613 mm	375 Kg

SHOVEL FOR BUILDING CONSTRUCTION

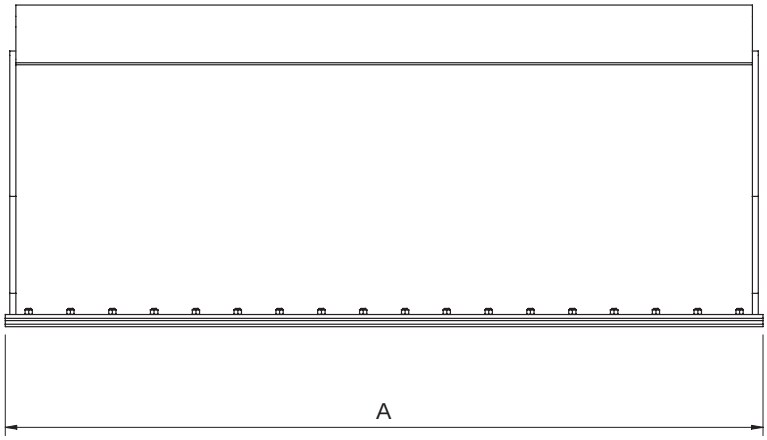
SPECIFICATIONS

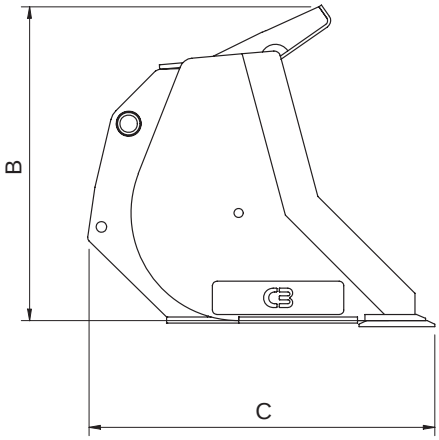


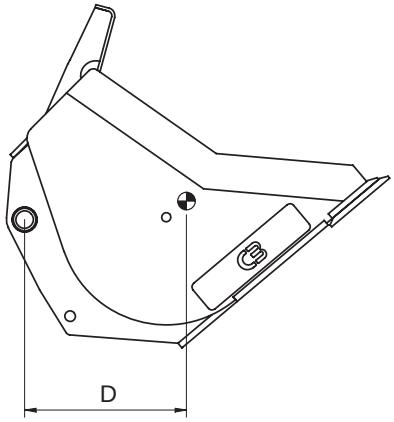
SPECIFICATIONS								
DESCRIPTION	CAPACITY			DIMENSIONS (mm)			ACCESSORY	WEIGHT
	LEVEL	NOMINAL	MAXIMUM	A	B	C		
CBC 1500 L 2500	1020 L	1336 L	1700 L	2500	1041	1272	404 mm	370 Kg

RECLAIM SHOVEL

SPECIFICATIONS



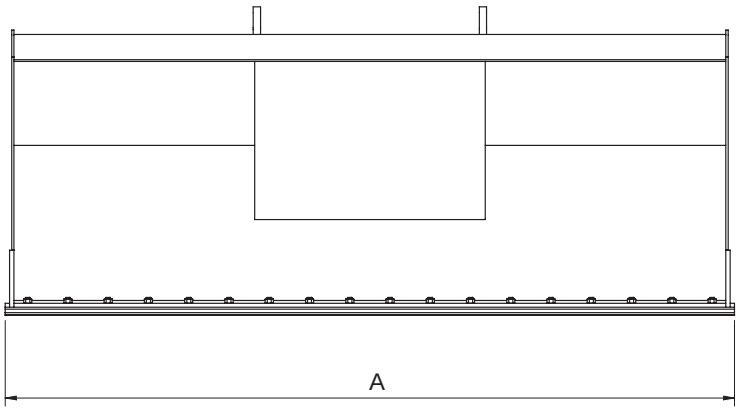


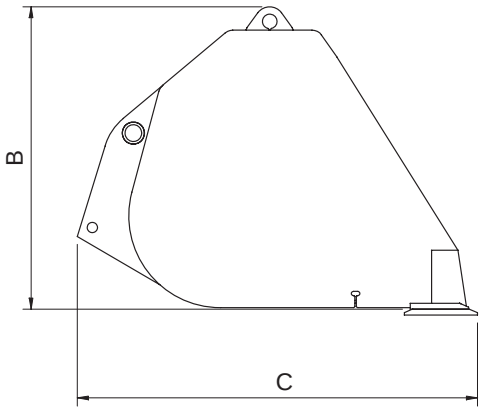


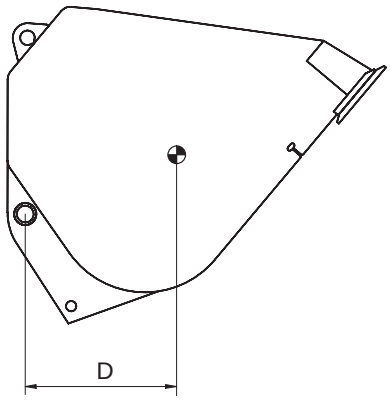
SPECIFICATIONS								
DESCRIPTION	CAPACITY			DIMENSIONS (mm)			ACCESSORY	WEIGHT
	LEVEL	NOMINAL	MAXIMUM	A	B	C		
CBR 1500 L 2500	750 L	1190 L	1500 L	2500	1035	1141	426 mm	800 Kg

AGRICULTURAL SHOVEL

SPECIFICATIONS



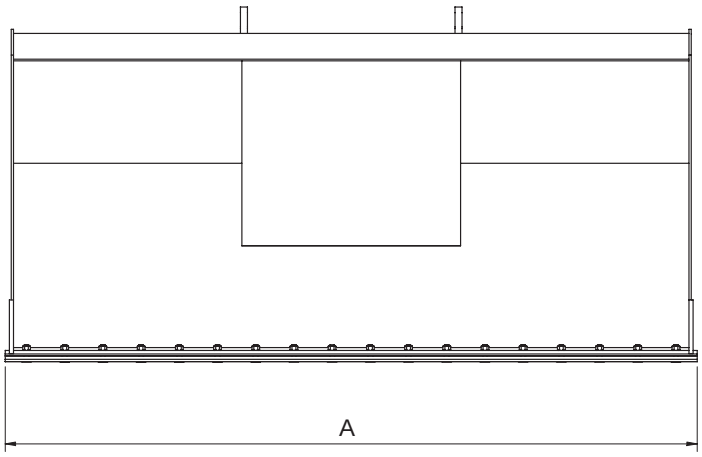


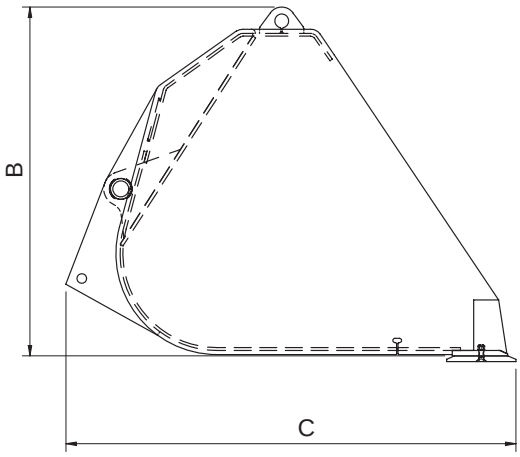


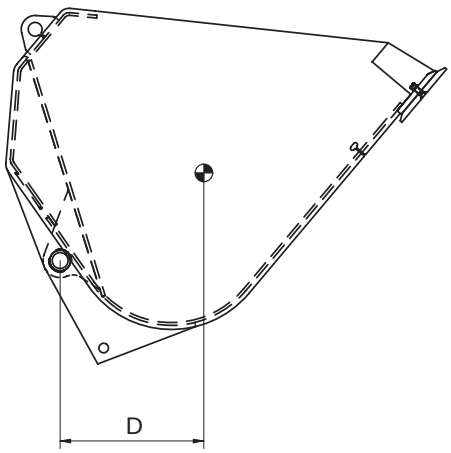
SPECIFICATIONS								
DESCRIPTION	CAPACITY			DIMENSIONS (mm)			ACCESSORY	WEIGHT
	LEVEL	NOMINAL	MAXIMUM	A	B	C		
CBA 2000 L 2500	1550 L	2005 L	2150 L	2500	1037	1371	469 mm	790 Kg

AGRICULTURAL SHOVEL

SPECIFICATIONS

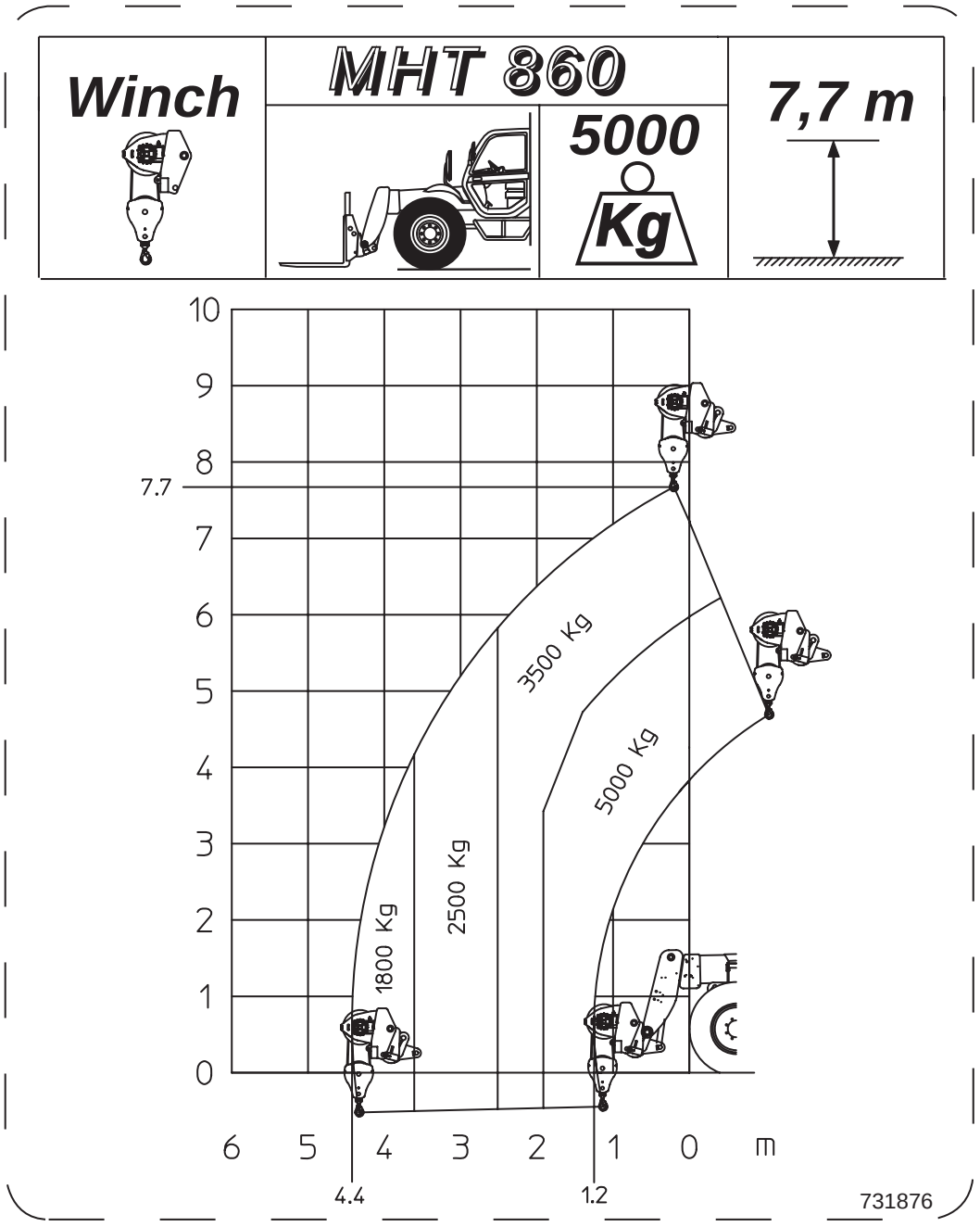






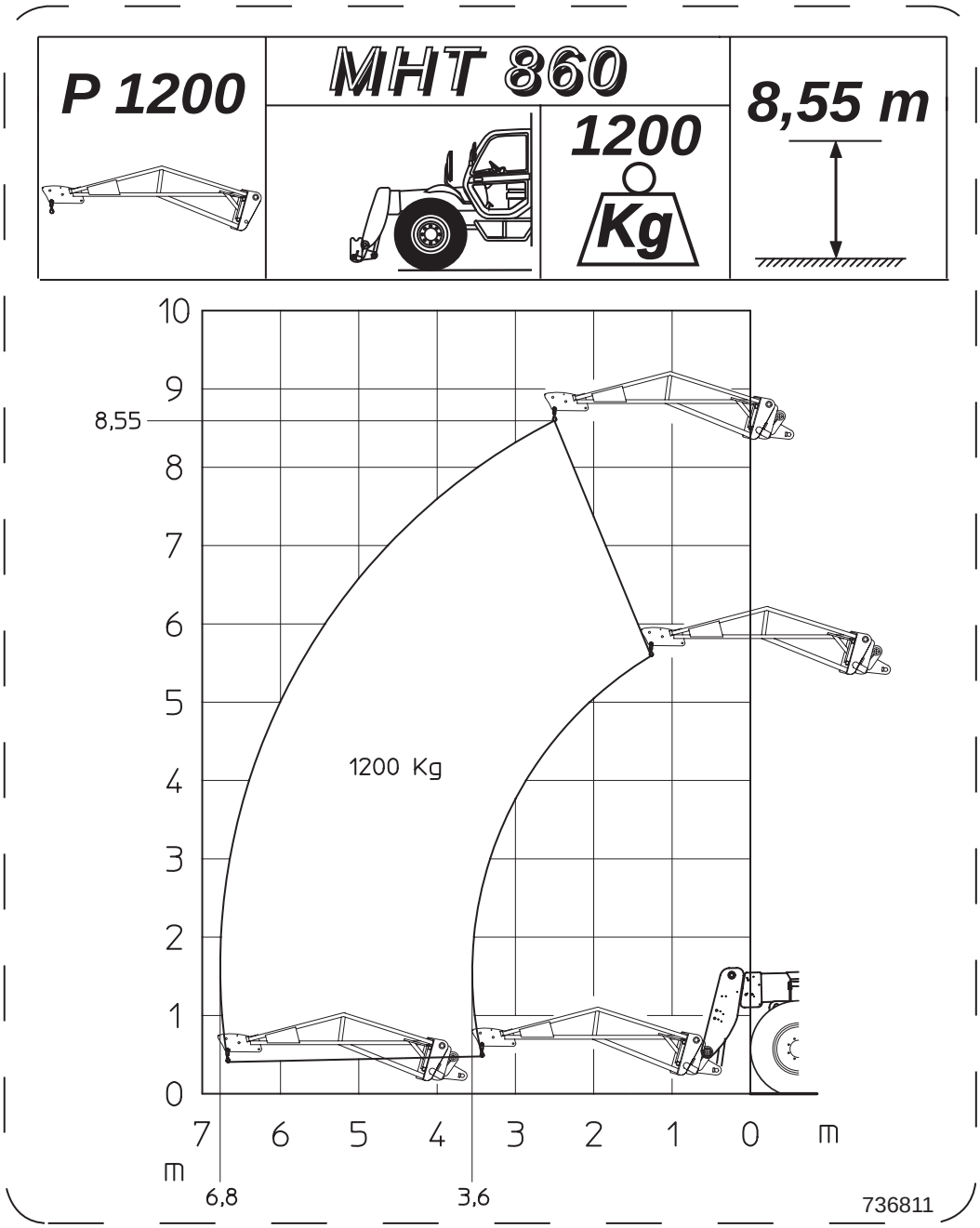
SPECIFICATIONS								
DESCRIPTION	CAPACITY			DIMENSIONS (mm)			ACCESSORY	WEIGHT
	LEVEL	NOMINAL	MAXIMUM	A	B	C		
CBA 3000 L 2500	2330 L	3003 L	3200 L	2500	1260	1626	461 mm	940 Kg

LOAD CHART
WINCH 5 TON



The capacity diagrams are only valid if the safety system is activated.

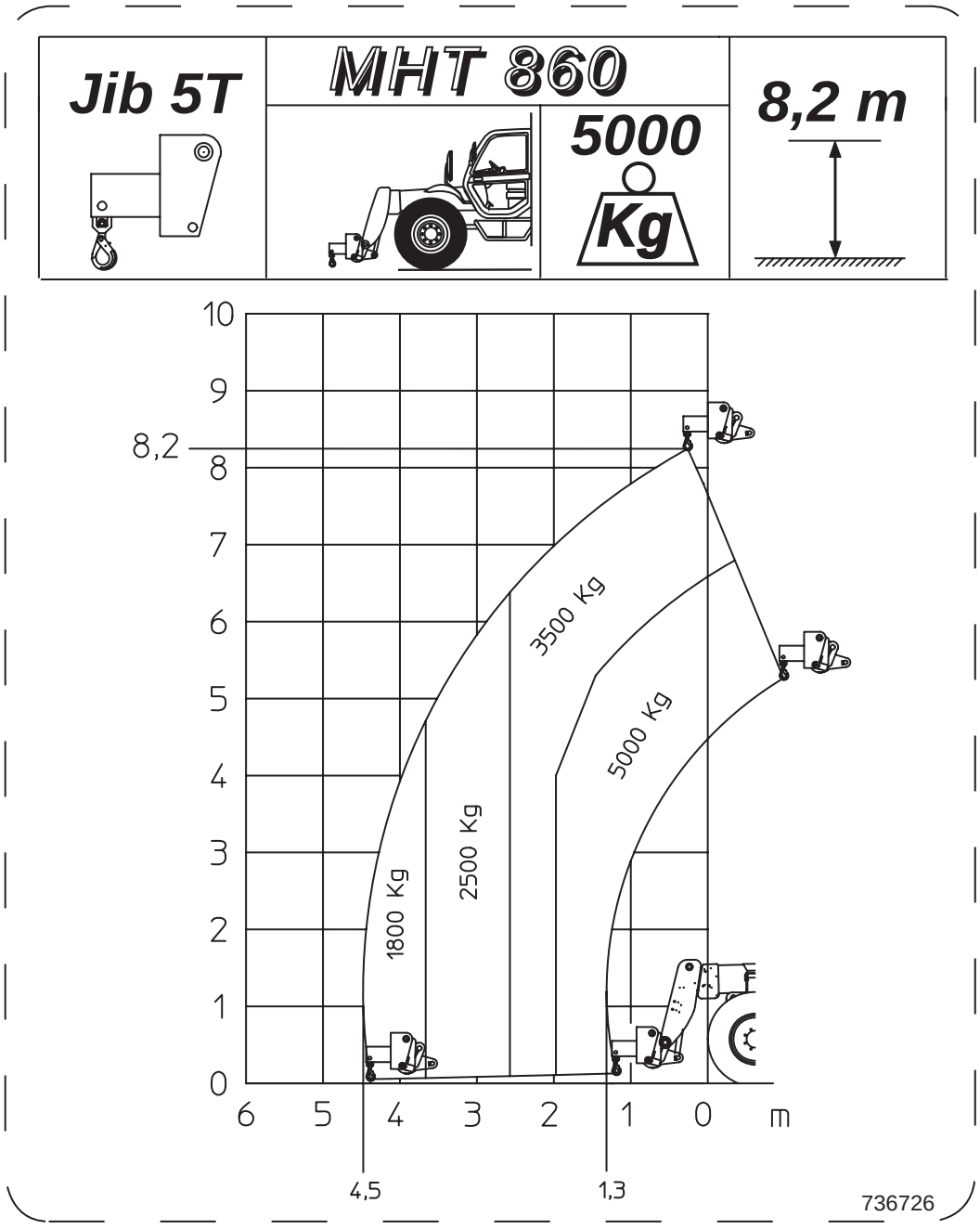
LOAD CHART
ARM P 1200



The capacity diagrams are only valid if the safety system is activated.

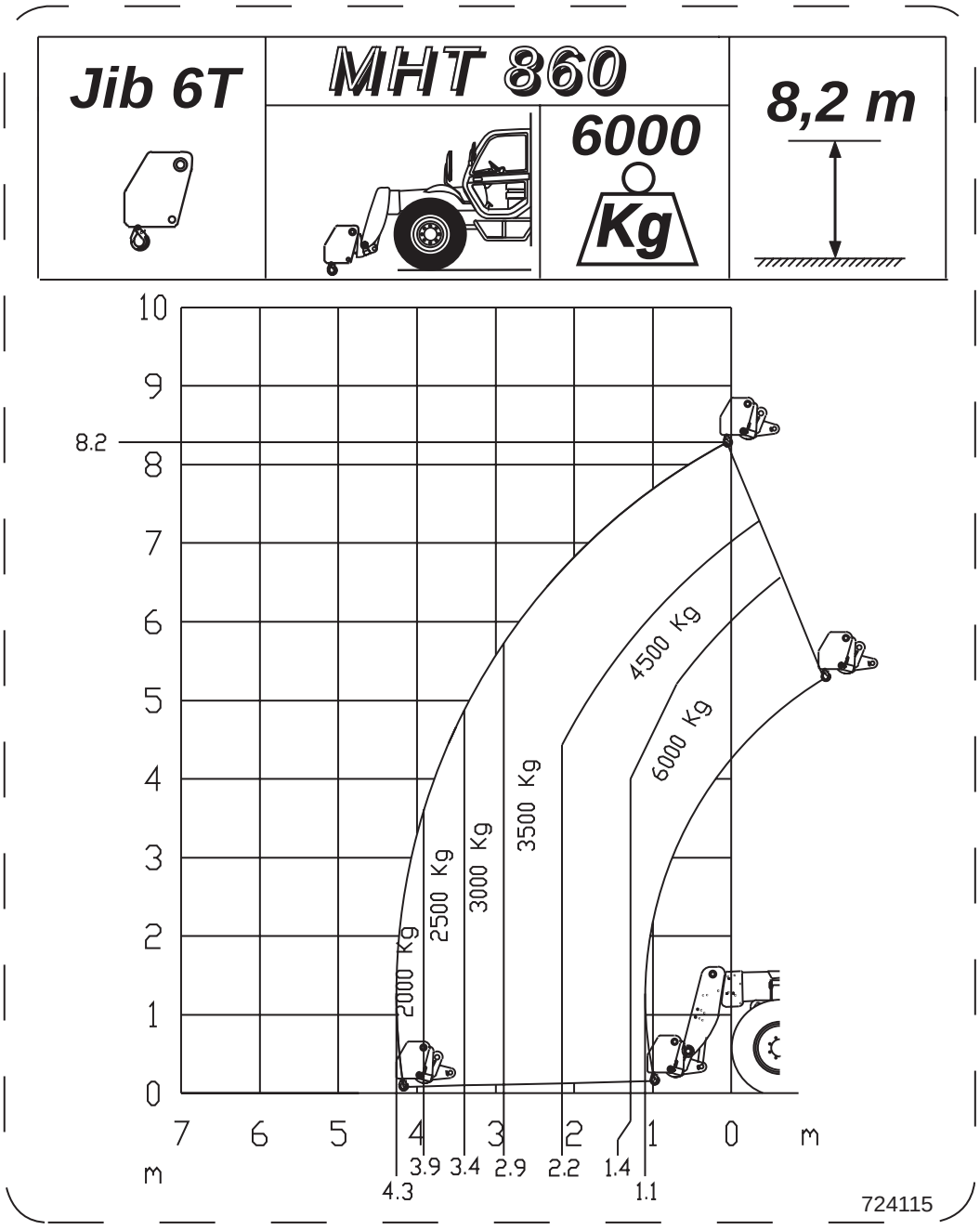
LOAD CHART

ARM WITH HOOK PC 50



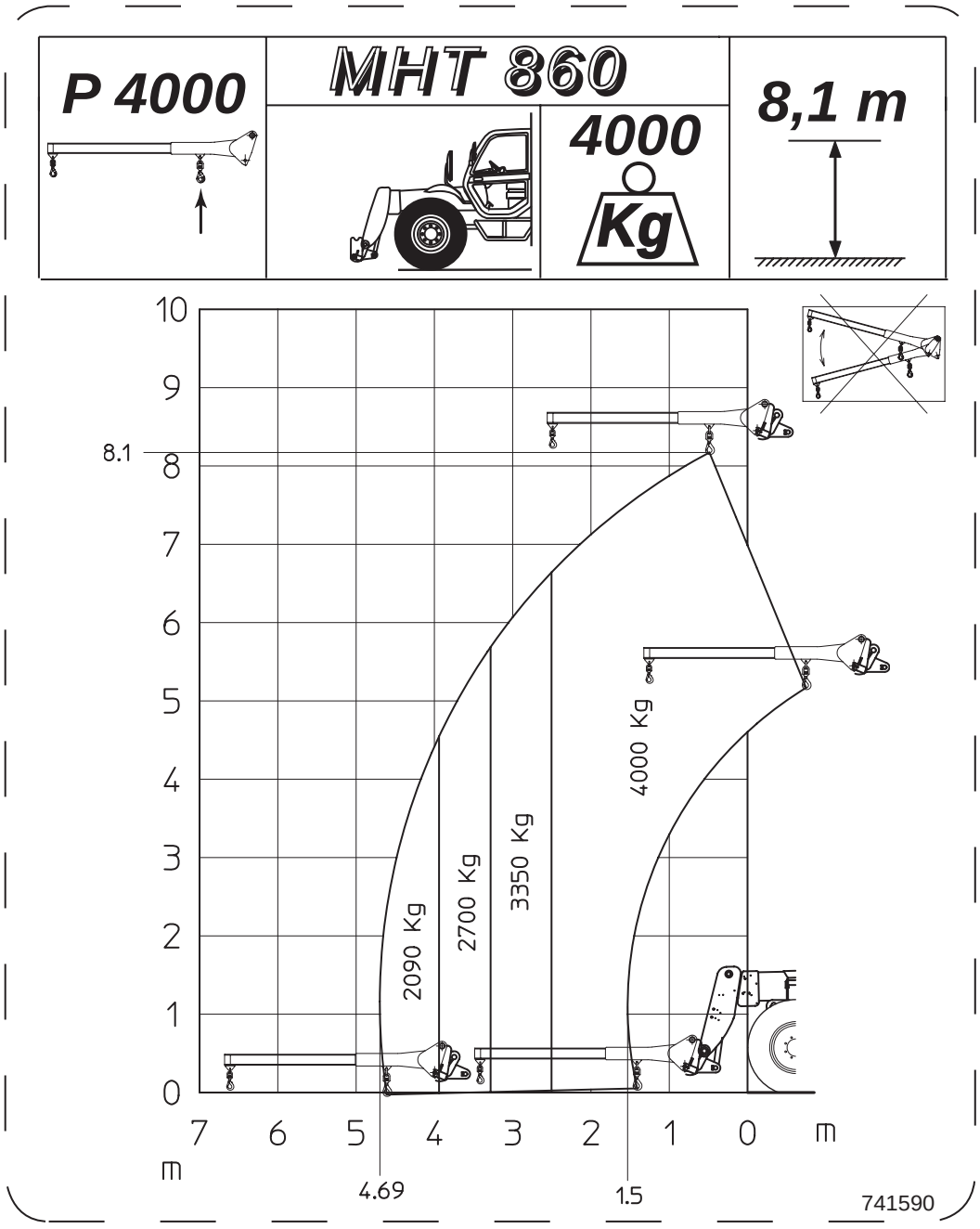
The capacity diagrams are only valid if the safety system is activated.

LOAD CHART
ARM WITH HOOK PC 60



The capacity diagrams are only valid if the safety system is activated.

LOAD CHART
ARM P 4000



The capacity diagrams are only valid if the safety system is activated.

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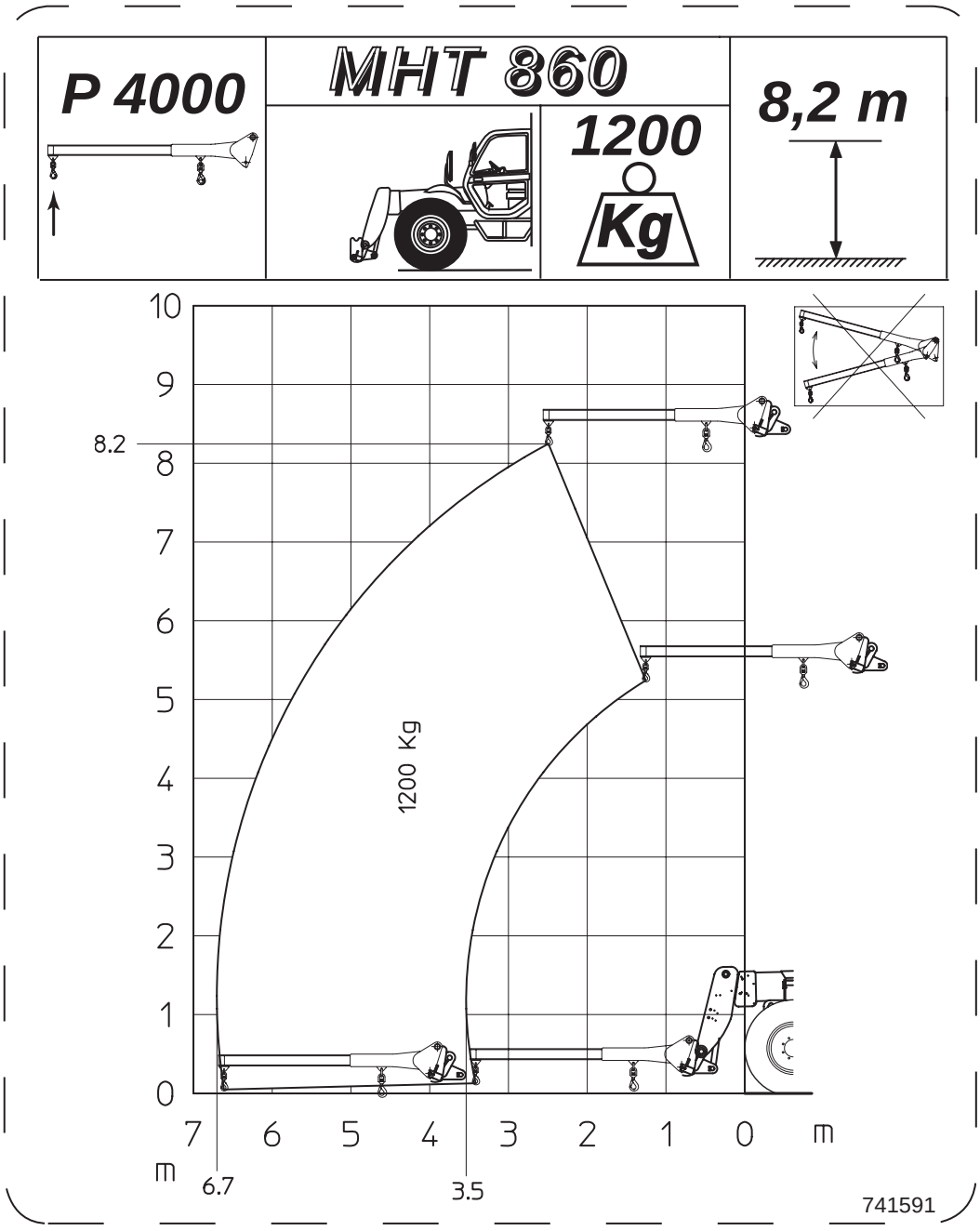
ARM P 4000



The capacity diagrams are only valid if the safety system is activated.

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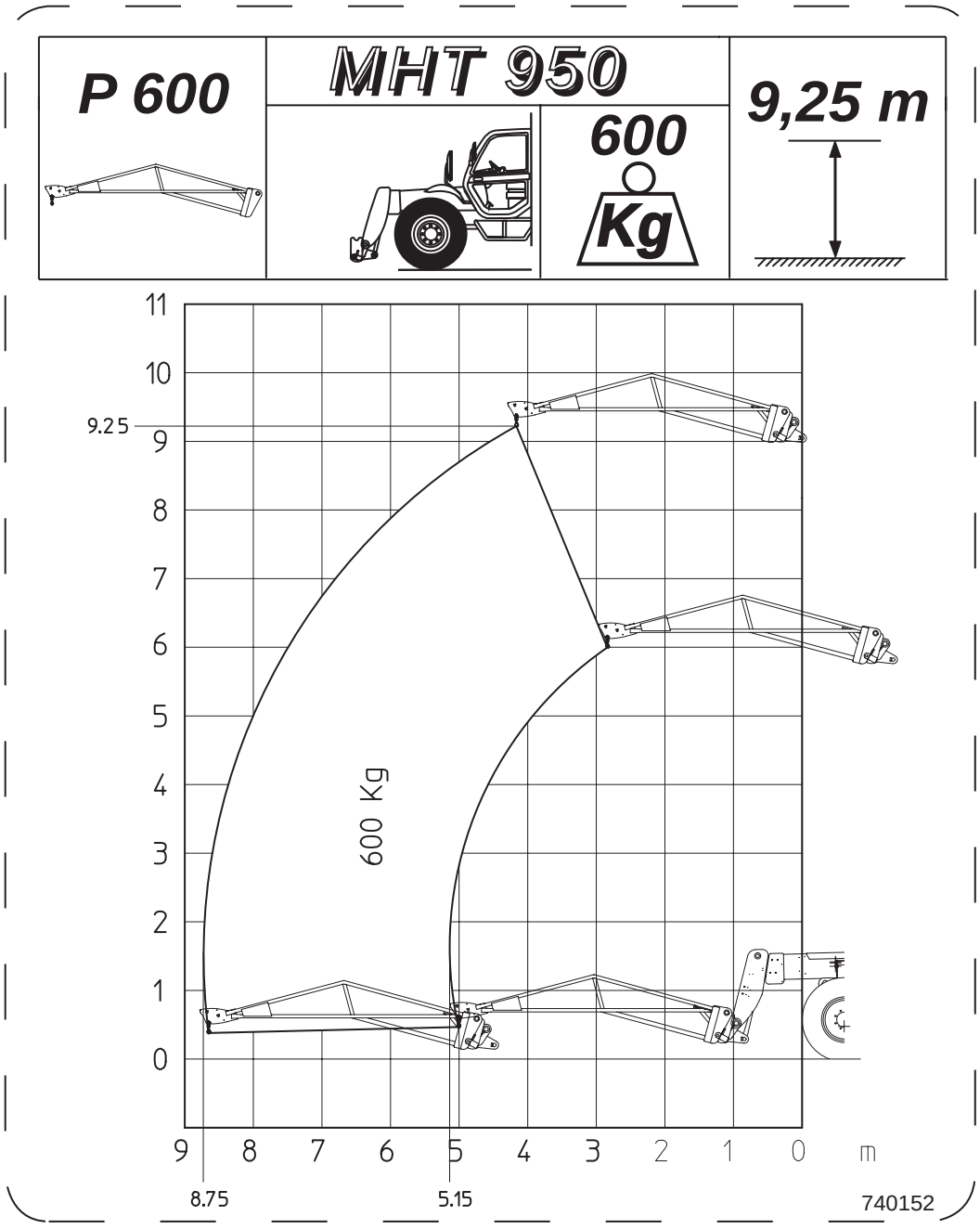
ARM P 600



The capacity diagrams are only valid if the safety system is activated.

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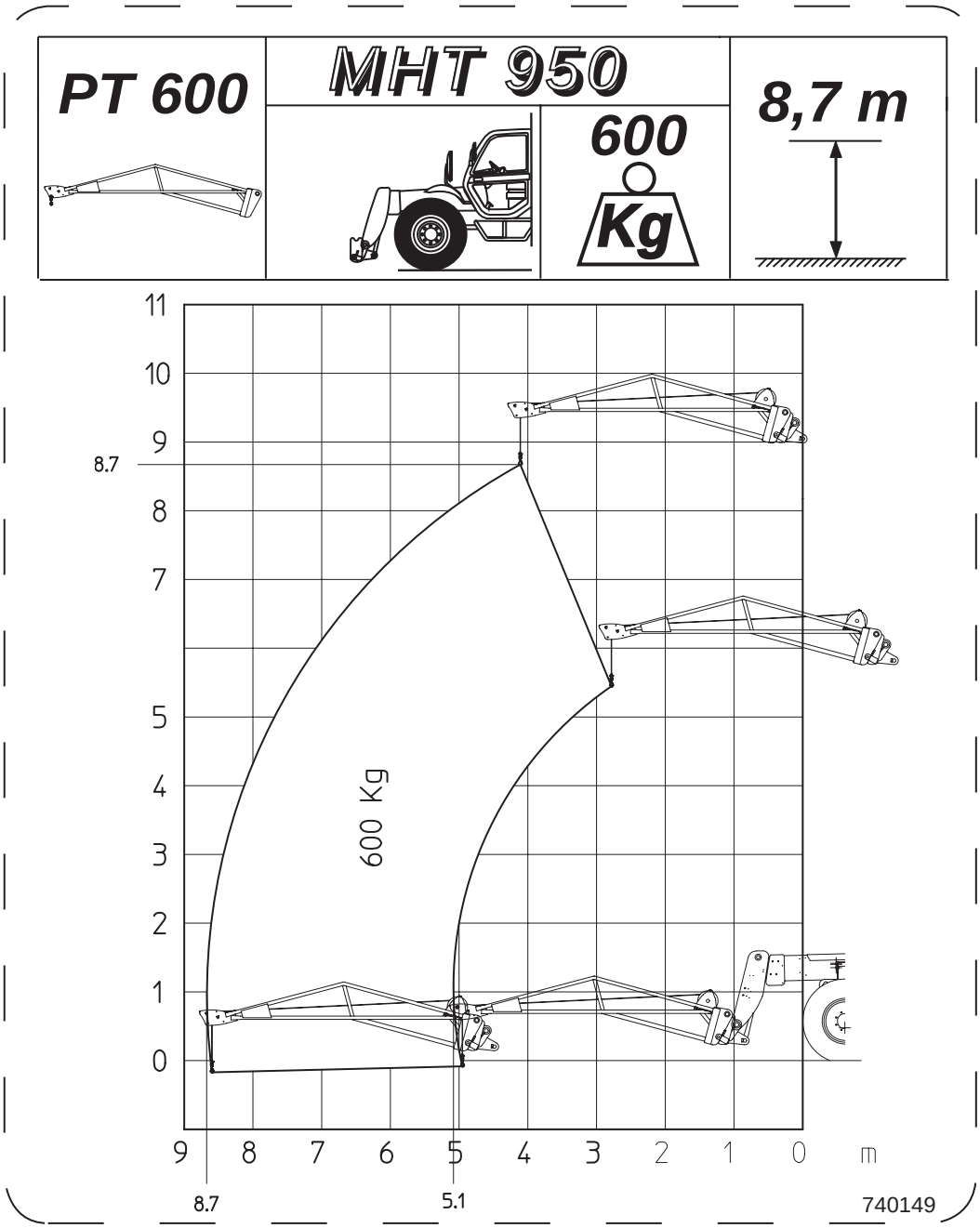

The capacity diagrams are only valid if the safety system is activated.

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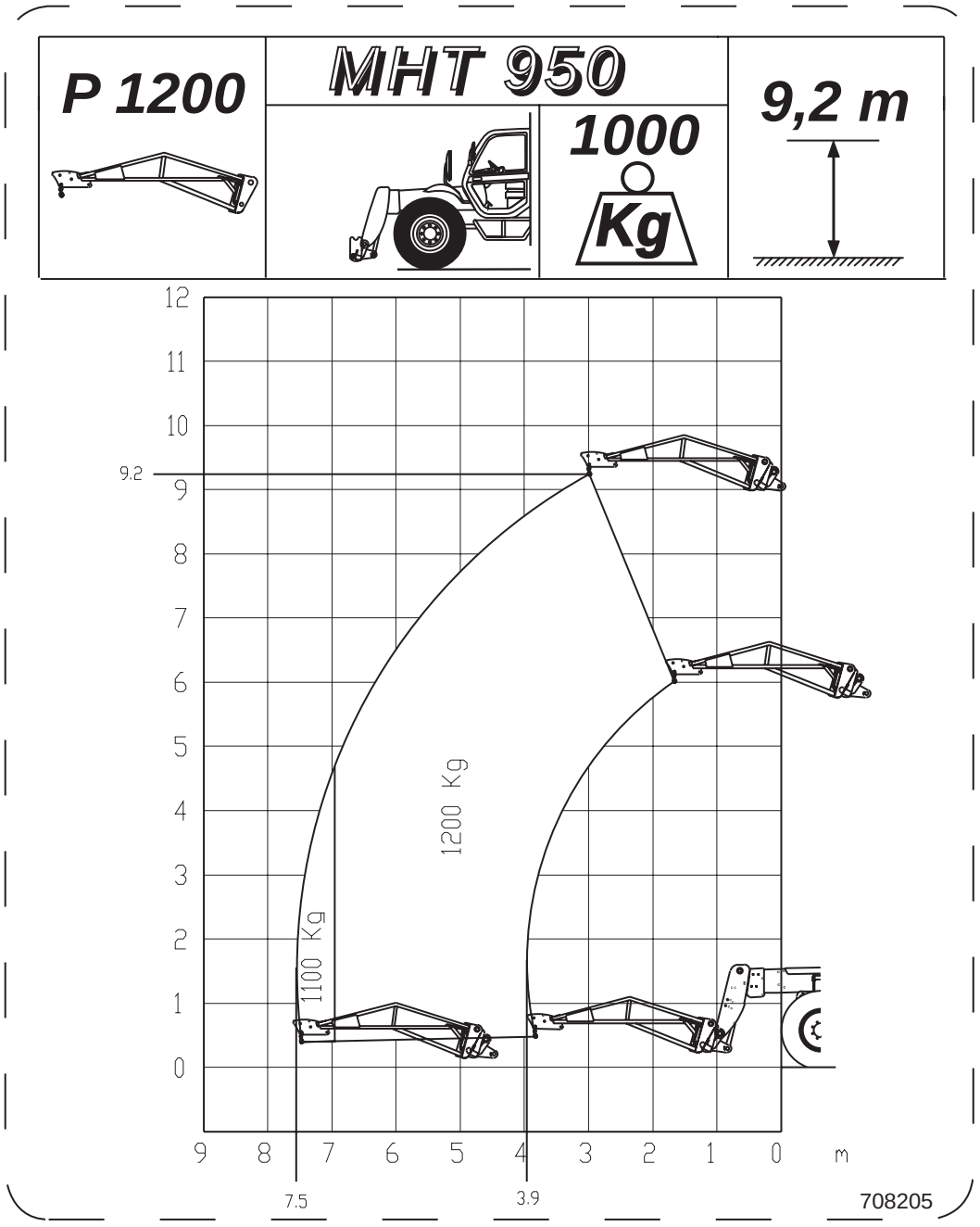

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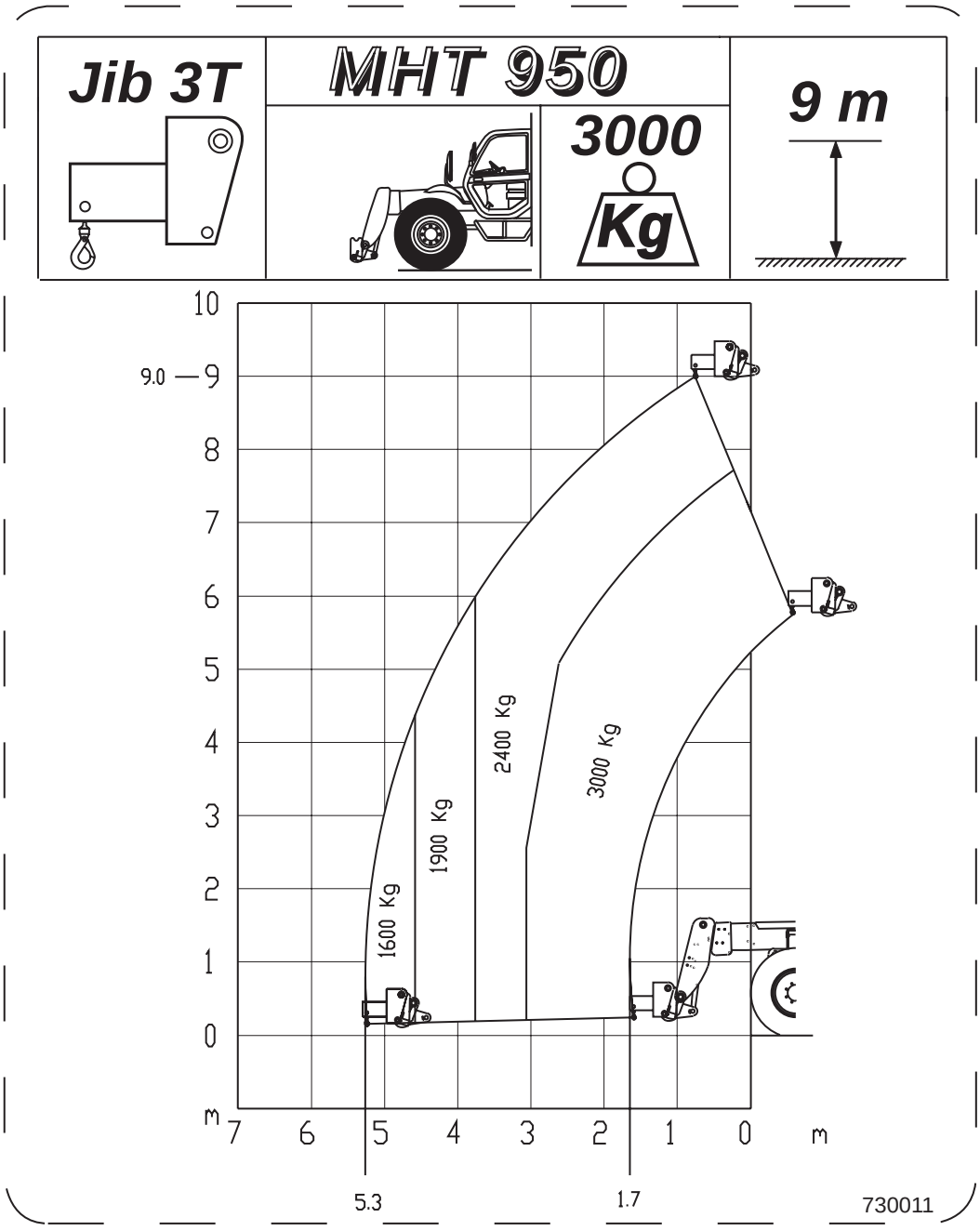
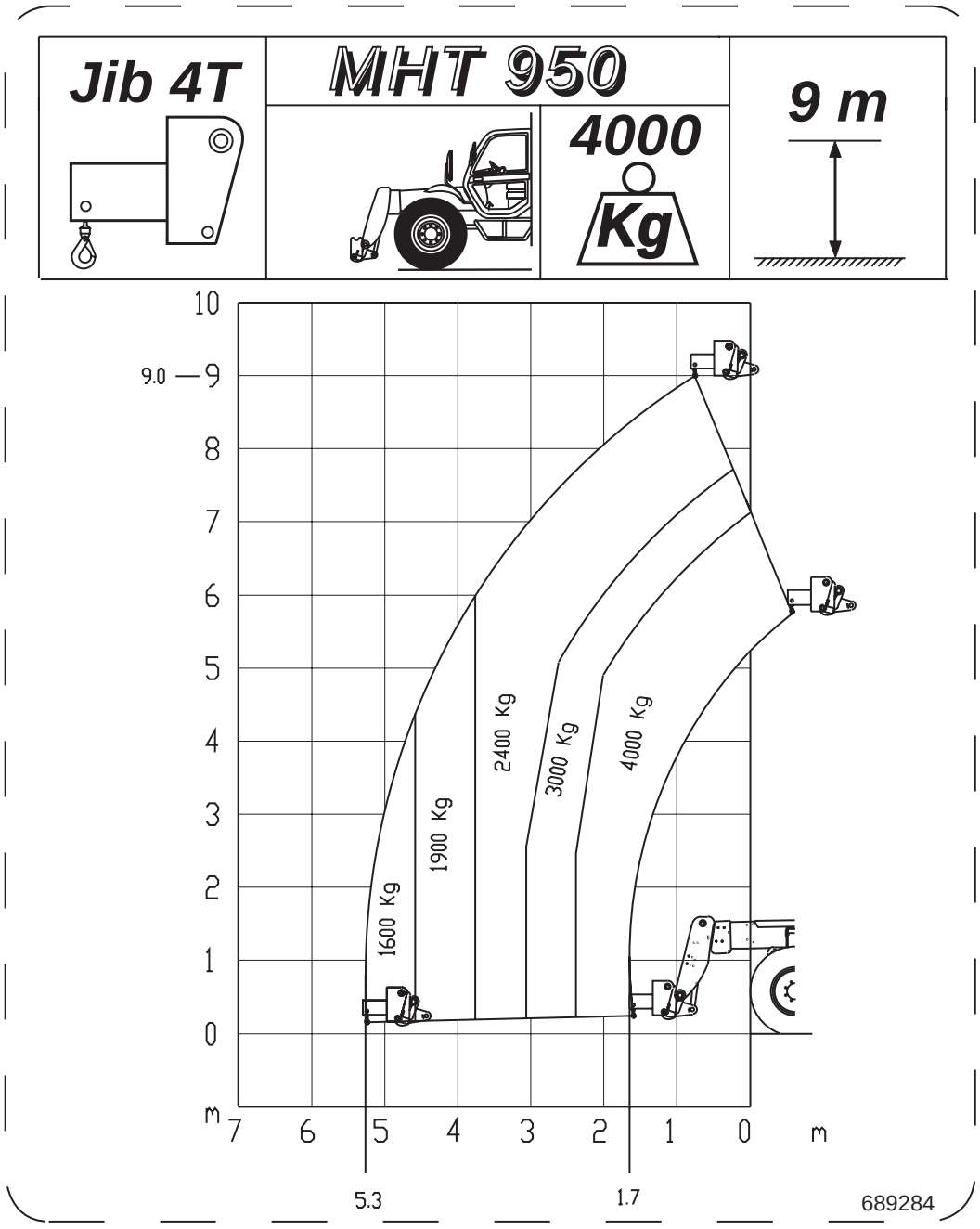
LOAD CHART
ARM WITH HOOK PC 30



The capacity diagrams are only valid if the safety system is activated.

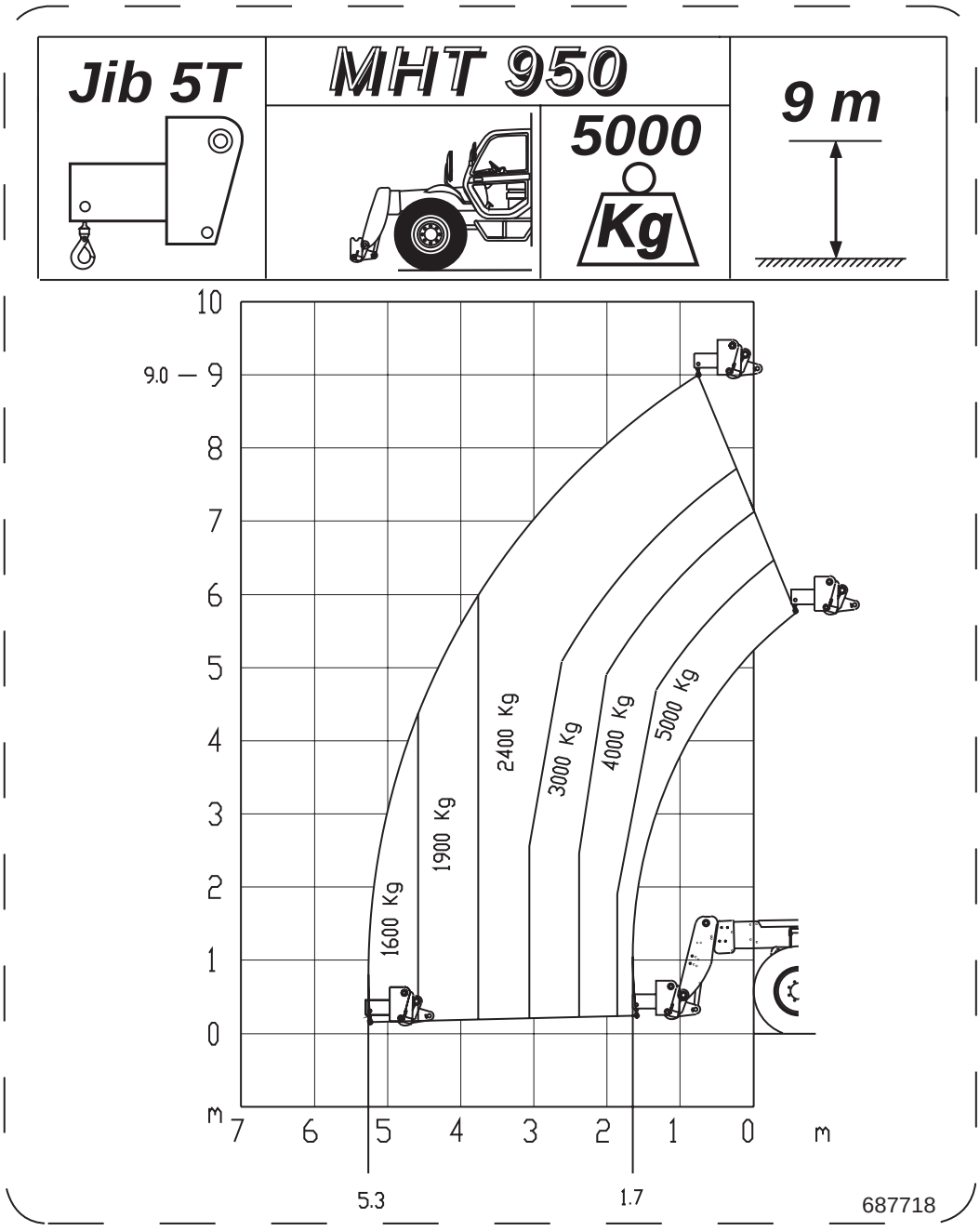
LOAD CHART

ARM WITH HOOK PC 40



The capacity diagrams are only valid if the safety system is activated.

LOAD CHART
ARM WITH HOOK PC 50



The capacity diagrams are only valid if the safety system is activated.

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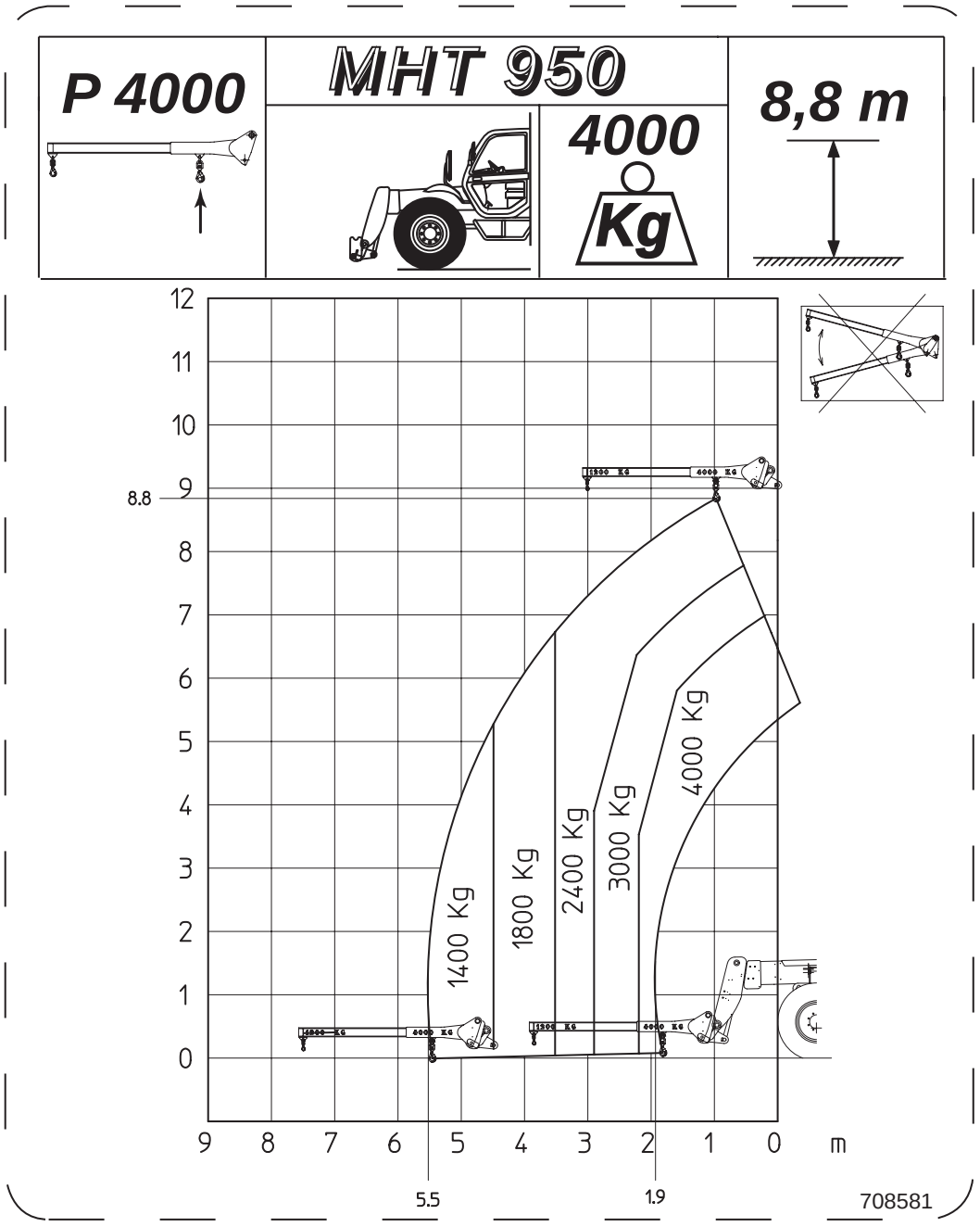
ARM P 4000



The capacity diagrams are only valid if the safety system is activated.

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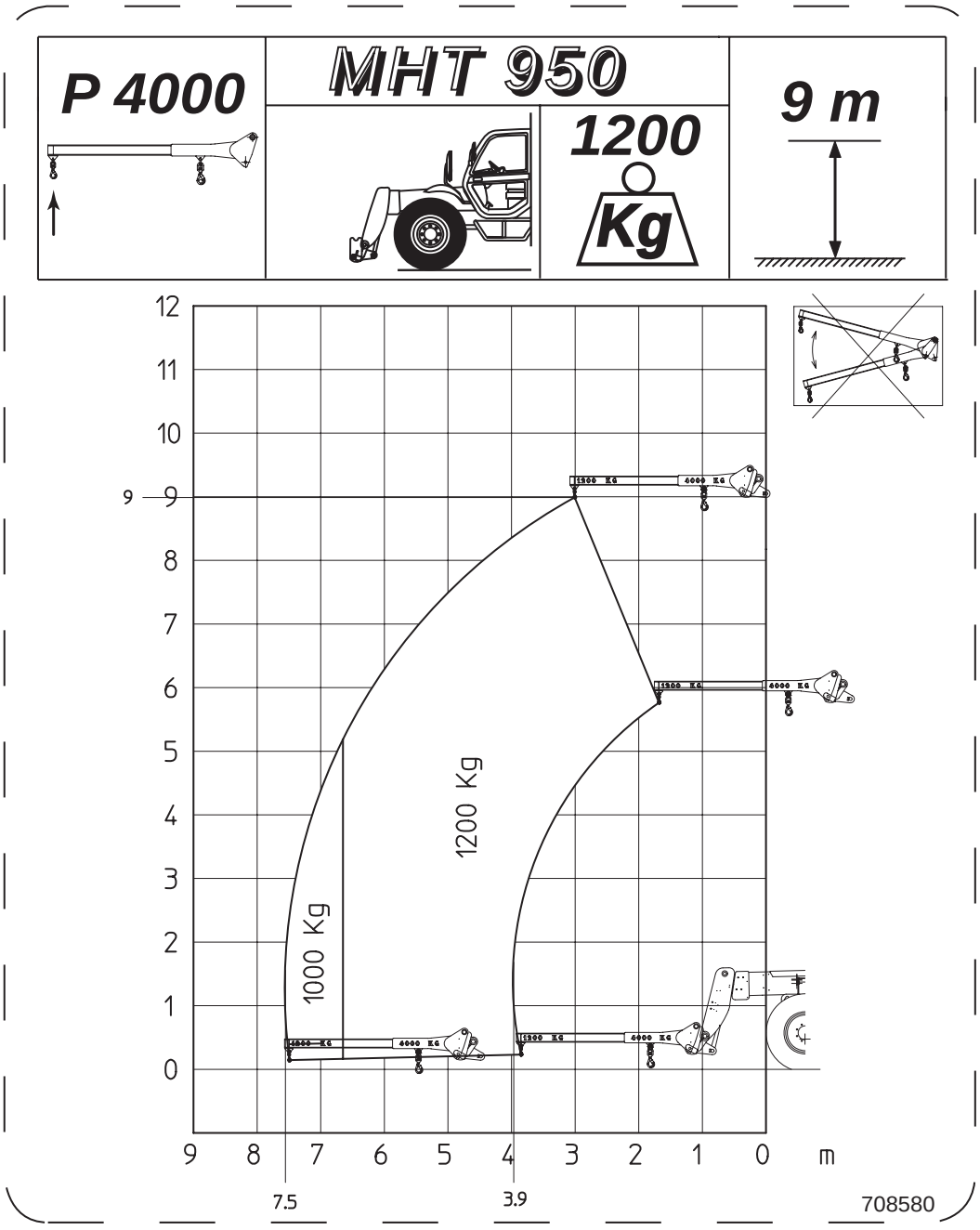

The capacity diagrams are only valid if the safety system is activated.

INTRODUCTION TO SAFETY